

THE UNIVERSITY OF HULL

**THE DIETARY HABITS AND HEALTH OF CONTEMPORARY
SAUDI FAMILIES:
A SOCIOLOGICAL STUDY IN THE CITY OF RIYADH**

**BEING A THESIS SUBMITTED
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
IN THE UNIVERSITY OF HULL**

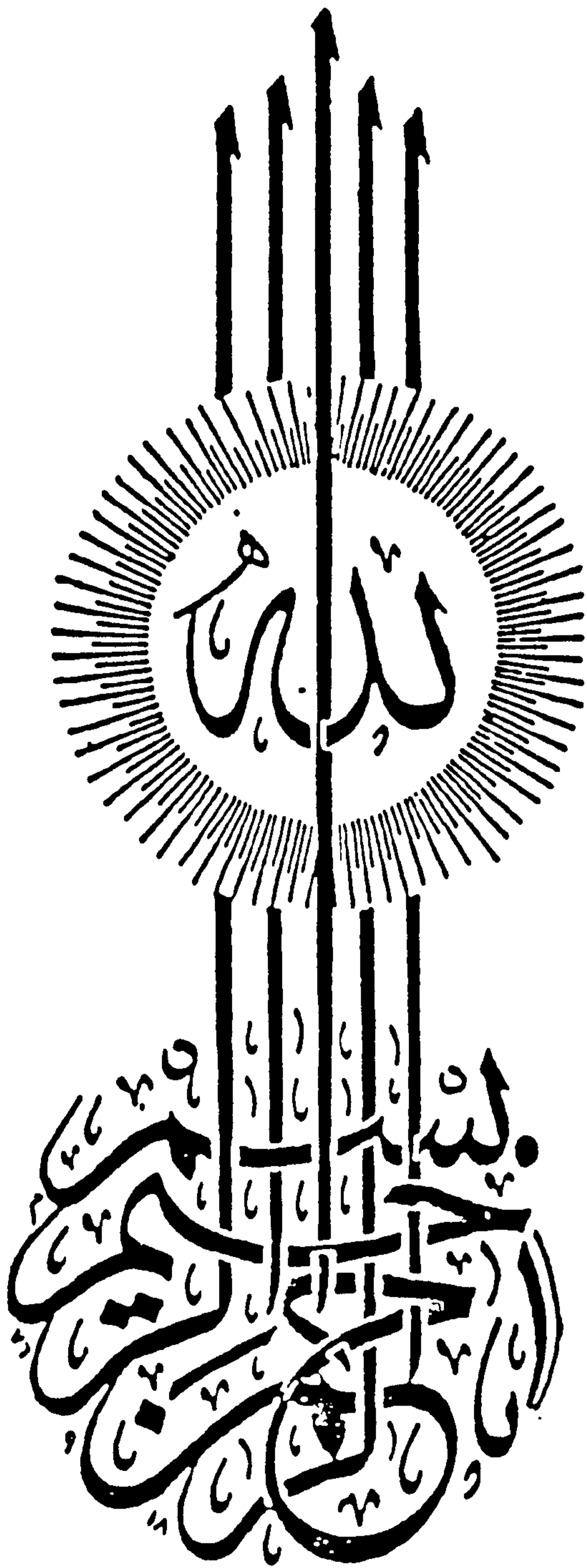
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*In the Name of Allah
The Merciful the Compassionate*

ABSTRACT

This study investigates diet and dietary habits, changes in food practices and nutrition in contemporary Saudi Arabia. A survey was conducted using the questionnaire method on a sample of 310 participants drawn randomly from four different quarters of Riyadh: Al-Worood, Al-Rabwah, King Saud University staff campus and Al-Oud. 17 questions were used to guide the research. Data were analysed using chi-square, correlation and cross-tabulation techniques.

The study revealed important changes in several investigated factors in general and within Saudi families in particular. Living conditions have improved through increased education, better medical care, technology, changes in income, communication and transportation systems. Consequently, certain economic and educational functions are no longer performed within the family domain but have been transferred to other society structures such as schools and markets. Moreover, there seems to be an increased dependency on foreign workers inside and outside the home.

Alongside these changes, changes in diet and dietary habits have occurred. There is a relationship between obesity and changes in diet and dietary habits resulting from increases in high fat, fast food and sweets. Increased consumption of carbohydrates of different types plus soft drinks, and low intake of fruits and vegetables, unfortunately go along with low levels of physical activity. Thus the obesity rate in 2001 was 52% in all Saudis and 66% among women. There seems to be a relationship between mortality rate and welfare diseases such as: obesity, diabetes, hypertension, hyper-cholesterol, heart diseases, cancer, gall bladder impairment and cardio-pulmonary diseases. These diseases might be associated with increased consumption of fats that are rich in amino acids, cholesterol and sodium chloride derivatives that are added to artificial drinks and foods. At the same time there is increased malnutrition and poor natural immunity among children which may be a result of the shift from

breast feeding to artificial feeding of babies. Poor dietary standards at schools owe to non-adherence of school canteens to proper dietary instructions.

Many malnutrition problems might be attributed to the lack of awareness of components of a healthy diet rather than to economic status. Consumption of natural, traditional food is on the decline, while the tendency to consume canned, frozen and new foods is on the increase. Excessive choices of food items available to consumers, along with low level dietary awareness of many people, might have led to failure of many people to make healthy food choices. The study found that modern cooking appliances have helped in changing Saudi diet and dietary habits. In regard to the relationship between gender and change in diet and dietary habits, the study indicated insignificant difference between them. But in regard to the relationship between age and going to restaurants and change in diet and dietary habits, the study found that the young generation are more likely to go to restaurants and change their diet than the older generation.

Mass media is a significant factor in increasing health awareness in the family and in society generally. In spite of that there is a need to improve health and nutrition programmes. There is a significant relationship between level of education and dietary awareness, health issues and level of income, number of children in the family and change in dietary habits. Findings regarding the relationship between income and family diet and health care indicate that there is a significant relationship between high income of the family and better diet and health conditions. But there seems to be no relationship between level of income and the number of children. Furthermore, there is a significant relationship between socio-cultural and physical environment, family diet and health. Traditions and customs seem to play a significant role in food choices and dietary habits. Social factors also appear to influence dietary habits.

Health authorities and educational curricula in schools and universities appear to play an inadequate role in making people aware of sound dietary principles. Moreover, there is an

acute shortage of children's health books, especially in the area of diet and dietary habits. In addition to that, there is a great need to increase and improve supervision of restaurants and grocery shops.

Despite several non conducive features, family health conditions have improved over the last two decades as a result of the efforts of the government combined with socio-economic change. However, there is a need for more improvement in family diet and health awareness, especially in the Al-Oud quarter.

More in depth studies of Saudi family diet and dietary habits by social scientists and medical professionals are needed to bring about further improvement of diet and health conditions, especially in the old quarters of Saudi cities.

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Chapter One
SOCIAL CHANGE IN SAUDI SOCIETY
HEALTH AND DIETARY ISSUES

Introduction:

This chapter discusses the aims and objectives of this study. Its primary focus is on the socio-cultural background of Saudi society as dietary habits are of crucial importance in understanding the health and nutrition status of contemporary Saudi society.

Diet and eating habits are common practices of every day life in any society and are not tied to biological needs, but also serve to mark boundaries between geographic regions, religions, cultures, social classes, gender, life cycle stages and feature in rituals and cultural traditions. As Lupton argues 'these phenomena which are often understood to be largely biological, such as hunger, taste and food preferences, are also products of the sociocultural environment into which we are born. From the moment of birth the ways in which individuals interact with other people and with cultural artifacts shape their response to food' (1996:1). Spencer and Durkheim dwelt on the religious functions of foods. Moreover, Thorstein Veblen thought of food and drinks as means of conspicuous consumption. While Georg Simmel emphasizes consequences of socialization of the meal. In addition to that, Norbert Elias does point to the significance of eating of meat as a manifestation of competitive social display. And finally, David Riesman's interest in food becomes quite evident as he expresses concern about changes in symbolic meaning of food. (In Mennell *et al.* 1992:2-3) Attention has also been paid by sociologists to the meanings, beliefs and socio-cultural factors which shape food practices in western societies. Lupton went further to classify food into a number of binary categories: 'good or bad, masculine or feminine, powerful or weak, alive or dead, healthy or non-healthy, a comfort or a punishment, sophisticated or gauche, a sin or a virtue, animal or vegetable, raw or cooked, self or other' (1996:1-2). Each of these binary oppositions contains power to shape food preferences and beliefs in every day life. Cooking is a process of transferring raw material from nature to the cultural state, thereby taming and domesticating it. Food is therefore, civilized by cooking, not simply at the level of

practice, but at the level of imagination. The practice of cooking has received little serious scholarly attention because of its transitory nature, and link with physical labour and servicing of bodies rather than with science, art or theory.

Social sciences has always been concerned with food. The historical development of interest in food is indicated by Mennell et al., (1992) who review several sociologists and social anthropologists contribution in the food realm. They also express the opinion that other important areas of social research, which explore the social dimensions of food and eating habits are in anthropology and medical sociology. Lupton in this regard, comment that 'Food practices and habits are now experienced through the framing of medical concerns about diet. The meanings and emotions that inhere around food and eating are therefore, inevitably linked to understandings about the health and medical associations of a food' (Lupton1996:68). From this wider concern about diet and dietary habits it is apparent that an investigation in this realm of the Saudi society context is both appropriate and worth undertaking. So, this study examines the effects of diet ¹ and dietary habits² on the health of the Saudi family and identifies some of the potential social variables shaping contemporary diet and health awareness ³ among Saudi people. Such work is important not only to help further our understanding of the particular context of SA but, also to raise some questions for future research not only in developing countries, but also in developed countries, in spite of the fact that the developed world, with its rising affluence, has seen an improvement in food supply, sanitation and health care. Consequently, infectious diseases have become less common and wherever they do occur, good medical facilities exist for their treatment. Nowadays, it appears that major health problems could be closely connected or related to an inappropriate lifestyle; where some people are unable to adapt sufficiently to stresses imposed on them by their way of life. Disease usually results from the combined effect

1-Diet is all materials that can be taken , fed upon and absorbed by the human body to help it to grow to perform its functions, to compensate for tissues , to generate energy and to protect it against diseases. (Laila Badra and Samiah Abdulrazaq, 1985:31)

2-Margaret Mead defined food habits as 'the culturally standardized sets of behaviour in regard to food, manifested by individuals who have been reared within a given cultural tradition . These behaviours are interrelated with other behaviours in the same culture' (1964:4)

3-The concept of health awareness is known to be : a translation of facts related to health and sickness into types of proper health behaviour by individuals, families and groups. It is thus an educational cultural process. (Protective Medicine Department, Ministry of Health, Riyadh , 1986:1).

of several factors, with unhealthy eating habits frequently one such factor. If this situation is true in developed countries, the situation in developing countries in general, and Saudi society in particular, could be more acute. Consequently social and medical studies become a paramount necessity. From this point of view this study intends to contribute by investigating, analyzing and improving our knowledge about diet related health problems in contemporary S.A, an issue which is a social and medical concern in general and for social scientists in particular. As Macbeth points out 'food is socially significant whether at family meals or at larger celebrations; different aspects of it are highly symbolic in different cultures' (Macbeth 1990:1). This point is also made by Fieldhouse (1986) who follows Sangur (1982) in his treatment of the subject of dietary habits and culture 'whilst it is easily seen that the direct consequences of food intake are biological—food meets the energy and nutrient needs of the body, it is also apparent that the nature of that food intake is shaped by social, religious, economic, and political processes' (1986:1). The how and why of dietary habits can be considered as one of the main elements in the mosaic of any culture with the cuisine of a society an important characteristic and integral part of its culture, being shaped by class, gender, age and ethnicity.

Understanding food habits is very important for health care planning, especially in developing countries, where many people, especially children, still die of preventable diseases. Infant mortality rates remain high in most developing countries. In this respect, the warning message given by the World Health Organization report (WHO 11/5/1998) on the global health situation and trends (1995-2025) is quite alarming. Five points are picked out as significant:

- By 2025, there will still be 5 million deaths among children under five, 97% of them in the developing world, and most of them due to infectious diseases such as pneumonia and diarrhoea, combined with malnutrition. ¹
- In 1995, 27% (168 million) of all children under 5 were underweight. Mortality rates are 5 times higher among severely underweight children than those of normal weight.

1-Malnutrition is physical weakness caused by not eating enough good food or by eating unhealthy food (English Language Dictionary :881).

Nutritional disorders may be caused by a deficiency or excess of one or more of the elements of nutrition, or by the presence of a toxin in the diet. (Smith. (ed), 1990:740).

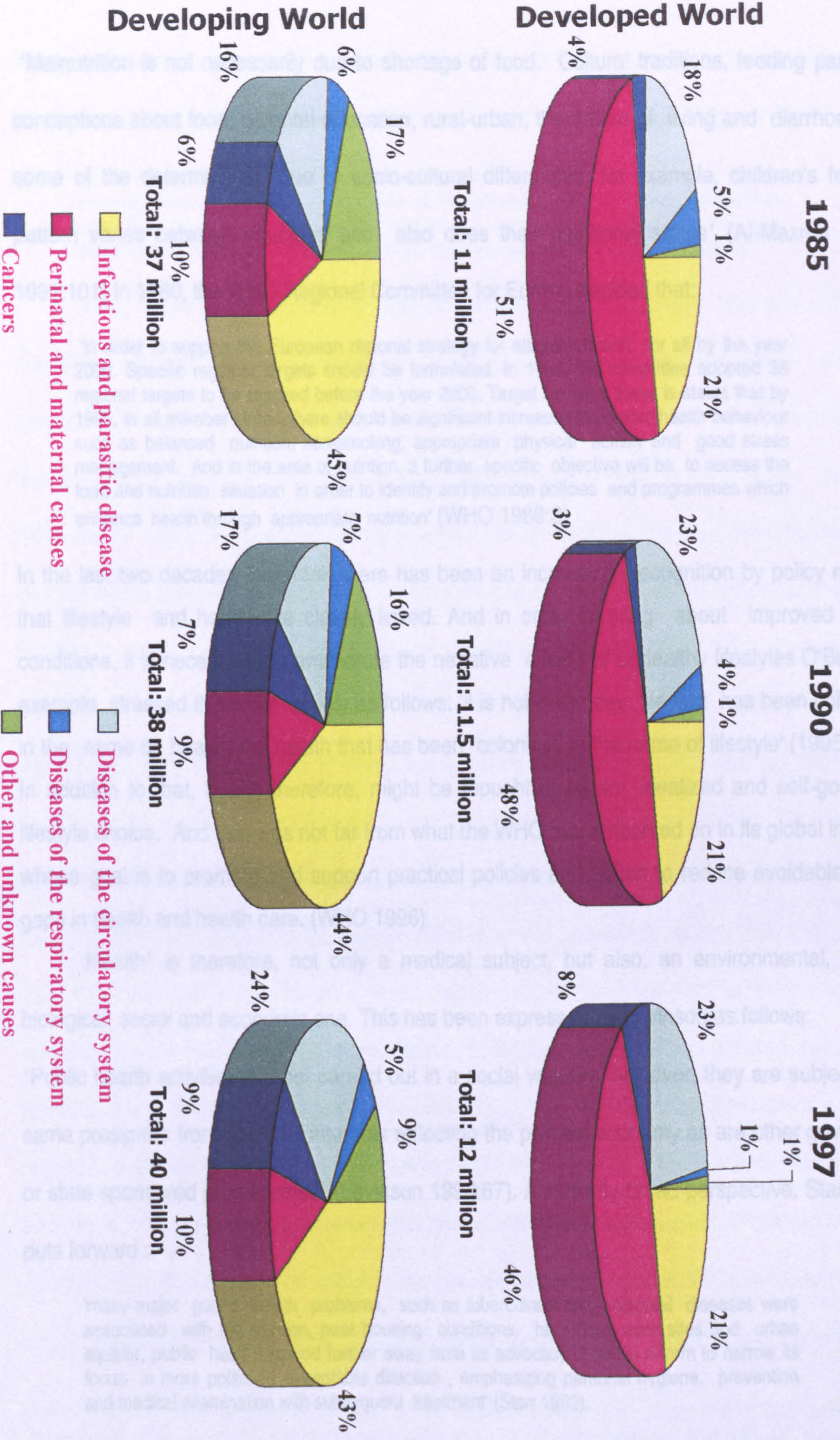
- About 50% of deaths among children under 5 are associated with malnutrition. Therefore, future preventive and health nutritional awareness plans ought to be made the most important priorities in planning and executing health and nutritional policies in developing countries.
- Infectious diseases will still dominate in developing countries. As the economies of these countries grow, non-communicable diseases will become more prevalent. This will be due largely to the adoption of "Western" lifestyles and their accompanying risk factors, such as smoking, high-fat diet, obesity¹ and lack of exercise.
- Cases and deaths of lung cancer and colorectal cancer will increase, largely due to smoking and an unhealthy diet respectively. Adopting non-native food and new dietary habits may create unmanageable and uncontrollable health hazards. The negative consequences of blindly adopting non-native food and dietary habits need to be considered. (WHO 1998:2-4).

(See figure 1-1)

In recent years it has become clear therefore, that the causes of poor health are not simply the common diseases from which people suffer. A low health standard is as much determined by the influence of the socio-economic environment and the political structure of the country. Both these help shape poor nutritional status and environmental health conditions. Al-Mazrou *et al.*, indicated that 'over 50 of all children's deaths in the world are directly or indirectly associated with nutrition. There are 177 million malnourished children in the world. This constitutes one malnourished child in every three children, and Asia alone comprise about 45% of all these children'(1991:101).

¹-Al-Quaiz (2001) defined obesity as 'it is a complex multifactorial chronic disease that develops from an interaction of genotype and environment . It involves the integration of social, behavioural, cultural, physiological , metabolic and genetic factors' (2001:205)

Fig. 1-1: Causes of Death: Distribution of deaths by main causes by level of development, 1985, 1990 and 1997.



Deaths in thousands and percentages of total (WHO) Report, 1998:7

'Malnutrition is not necessarily due to shortage of food. Cultural traditions, feeding patterns, conceptions about food, parental education, rural-urban, the nature of living and diarrhoea are some of the determinants. Due to socio-cultural differences, for example, children's feeding pattern varies between countries and also does their nutritional status' (Al-Mazrou *et al.*, 1991:101) In 1980, the WHO Regional Committee for Europe decided that:

'in order to support the European regional strategy for attaining health for all by the year 2000. Specific regional targets should be formulated. In 1984, the committee adopted 38 regional targets to be reached before the year 2000. Target No.16 of these is states that by 1995, in all member states, there should be significant increases in positive health behaviour such as balanced nutrition, non-smoking, appropriate physical activity and good stress management. And in the area of nutrition, a further specific objective will be to assess the food and nutrition situation in order to identify and promote policies and programmes which enhance health through appropriate nutrition' (WHO 1986:3)

In the last two decades therefore, there has been an increasing recognition by policy makers that lifestyle and health are closely linked. And in order to bring about improved health conditions, it is necessary to ameliorate the negative effects of unhealthy lifestyles O'Brien for example, stressed this point plainly as follows: 'it is not every day life that has been colonised in the name of health, but health that has been colonised in the name of lifestyle' (1995: 202). In addition to that, health therefore, might be thought of as an idealized and self-governed lifestyle choice. And that was not far from what the WHO has embarked on in its global initiative whose goal is to promote and support practical policies and action to reduce avoidable social gaps in health and health care. (WHO 1996).

Health¹ is therefore, not only a medical subject, but also, an environmental, cultural, biological, social and economic one. This has been expressed by Levinson as follows:

'Public health activities are not carried out in a social vacuum, however, they are subject to the same pressures from powerful interests reflecting the political economy as are other government or state sponsored programmes' (Levinson 1998:67). A similarly broad perspective. Starr (1982) puts forward :

'many major public health problems, such as tuberculosis and venereal diseases were associated with malnutrition, poor housing conditions, hazardous work sites and urban squalor, public health moved further away from its advocacy of social reform to narrow its focus in more politically acceptable direction , emphasizing personal hygiene, prevention and medical examination with subsequent treatment' (Starr 1982).

1-Health has been defined by the World Health Organization as the state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. It implies complex interactions between humans and their environments, more particularly between social and economic factors, physical and biological environment. (Phillips and Verhasselt 1994:1)

Health education is therefore, one of the most important factors, crucial to the promotion of health awareness. And that is what Levinson has in mind when he suggested:

'a small increase in the population's education or economic level will have a greater impact on health than all health resources combined. Nevertheless, public health has continued to concentrate on changing individual behaviours and exposures, to pathology rather than targeting the conditions influencing those behaviours and exposures' (Levinson 1998:68).

Rising public health awareness might be thought of as the ultimate final goal of health education generally speaking. However, dietary awareness can be considered as one cornerstone of public health¹ in particular. Increasing the population's dietary awareness should therefore, be an essential basic goal of any health service, in order to achieve and develop better health status. In most developing countries lack of health awareness, poverty, illiteracy, communicable diseases combine with poor nutrition to be main obstacles to health. However, nutritional status and dietary habits are, as noticed above, affected by social customs and beliefs, and in this respect the social, economic and cultural changes, which have been experienced by the Saudi society for the last 40 years, may have begun to have an impact on dietary habits, and thus may be linked to changes in the health of Saudi families. For example, there has been a conspicuous increase in some nutritionally related illnesses such as diabetes. Also, the incidence of stomach, oesophagus and intestinal diseases increased from 3,190,859 in 1994 to 3,595,600 in 1999 (Annual Health Reports 1994:57 and 1999:83). Besides these two illnesses, there are others, which might also be caused by change in diet and dietary habits like blood pressure and heart disease. Therefore, in the context of rapid social change, Saudi Arabia has experienced dramatic changes in all of these aspects of life due to the discovery of oil in 1938, and it is therefore, interesting to find out whether this has affected the lifestyle and dietary habits of the people in order to explore the potential impact which new dietary habits might be having on family health. In Saudi Arabia (SA), it is important to find out whether the

1-Public Health can be defined as follows: 'The provision of pure water supplies and safe systems for the disposal of sewage. Also, it is the measurement and control of infectious diseases and the means of improvement in case of women during pregnancy and of children in the first years of life. Finally, public health includes programmes to improve nutrition and provide immunization against infectious diseases' (Smith.(ed) 1990:843).

dramatic and sudden influx of food, goods and services might have affected the lifestyle of the population and to what extent changes which have taken place may have affected Saudi nutritional and health status. This is the main aim of this thesis.

Objectives of the Study:

The objectives of this study are to investigate the diet and dietary habits of the Saudi people by finding out if there have been changes from traditional food consumption patterns, and situating these changes within the context of contemporary dietary habits and practices, nutritional¹ awareness and health status. This dissertation has therefore, the following objectives:

Objective One: To explore everyday food beliefs, including the dietary habits of Saudi families.

To explore this objective the following questions were identified as significant at the outset of the study:

- What are the types of food and drinks most commonly taken by the Saudi family?
- What are the most common types of foods and drinks consumed at parties and social ceremonies?
- What are the dominant nutritional habits in Saudi society?
- What role do custom and traditions still play in shaping the Saudi diet?
- What effects might food fashion have on Saudi people's food choice and dietary habits?
- What have been the effects of technology in changing Saudi family food patterns?
- Does family income have any impact on family nutrition and dietary habits?
- To what extent is the Saudi family keen on altering its consumption of food?
- Does educational level have any impact on family nutrition and dietary habits?
- What is the role played by health education in increasing health and nutritional awareness in Saudi Society?

1-Dietary awareness can be considered as 'the process of educating individual how to properly and effectively use the diet in a manner that would help him/her to know the proper dietary benefits, the proper dietary components, how to make the right variety as far as quantity and quality of food is concern, not repeating one item of food; and food variations should not be taken at one time' (Al-Oboudi, 1995:5)

- What is the role played by the mass-media in increasing Saudis' family awareness of unhealthy dietary habits?

Objective Two: To identify dietary practices in the every day life of the Saudi family. Specific research questions in this regard are:

- Who carries out the task of preparing meals and cooking food in the family?
- How often do Saudi family members go to restaurants for meals?
- To what extent do people depend on restaurants and take away food premises for their formal gatherings and ceremonial occasions?.
- To what extent are the diets of special groups such as children, pregnant and lactating mothers, sick people, and the elderly taken care of in the Saudi family?
- What is the effect of travelling abroad on family dietary habits and food choice?
- What might be the effects of changes in diet and dietary habits on the health of the Saudi family?

These questions were purposefully drawn up in order to help fulfil the aims of this study and to realize the five goals of research as Punch (1999) has so eloquently put it:

- 1-To organize the project, and give it direction and coherence.
- 2-To delimit the project, showing its boundaries.
- 3-To keep the researcher focused during the project.
- 4-To provide a frame work for writing up the project.
- 5- Pointing to the data which will be needed: (1999:38).

It is hoped that this study will contribute broadening and enriching the academic debate in medical sociology in general and diet and dietary habits and practices in particular. There is a shortage of research in the field of the social aspects of diet, dietary habits and practices - at least in the Saudi context. This study can be considered a positive step forward in filling the gap in our knowledge of the relationship between diet and health in the Saudi context.

The increased incidence of diseases, which are related to diet and dietary habits, such as diabetes, hypertension, obesity, heart diseases, tooth decay and malnutrition has become a matter of serious national concern in S.A. during the last 40 years. Therefore academic research into the causes and prevention of such diseases has an extremely important role to play. This study can be considered as a piece of applied social research, which has such a role. It is hoped that the recommendations of this study could be used by health authorities and nutritionists in their future plans, not only for monitoring people's dietary habits and practices but also to serve as a basis for policy decisions by the government and for projections of future consumption trends. Although this study was carried out in the city of Riyadh, it was intended to provide an overall picture of what is taking place in respect of global influences on diet, dietary habits and practices. This means that the Saudi case can be situated within the context of the modernization and globalization of food theory. Finally it is hoped that the results of this study could be utilized to improve educational materials to raise public knowledge and awareness concerning healthy eating over the broader Saudi population.

Since this study is concerned with diet and dietary habits in Saudi Arabia this chapter will give a brief descriptive picture of the background of Saudi society. Special emphasis will be given to economic change, the mass media, communication system, impact of technology, education, internal migration, culture contact, food retailing and nutrition and malnutrition in contemporary Saudi society. The second chapter explores the factors influencing food choices and dietary habits, while chapter three deals with the research design and the study methodology. In chapter four, the traditional Saudi diet and changes in Saudi diet and dietary habits are discussed in more detail. Chapter five explores the various different dimensions of change in the Saudi society in general and in the family in particular. Since health education is extremely crucial to this study chapter six explores this issue in some details. Finally, the findings of this study are put forward and recommendation made in chapter seven.

Description of Saudi Society:

The Kingdom of Saudi Arabia lies in the southwestern part of Asia occupying about four-fifths of the Arabian peninsula, with an area of approximately 2,300,000 square kilometres. Geographically Saudi Arabia is divided into five regions (Central, Western, Eastern, Southern, Northern) as shown in Figure (1.2) The Central Region, Najd is where the capital city of Riyadh is located. The Western region Al-Hijaz lying along the Red Sea coast, where the Holy Places are located in the cities of Makkah and Medina, is the gateway to Saudi Arabia having the longest history of contacting and adopting cultures and nutritional habits of other population. The eastern region is where the oil fields are located providing greater part of revenues to the Kingdom. The southern region Asir is the least urbanized, but is heavily populated due to more rainfall. Here agriculture is the major source of income. And finally, the Northern region has greater contact with Mediterranean cultures. The mean temperature is about 97°F in early summer while the maximum temperature can reach 118°F in later summer. Winter is cold, especially at night in the deserts. The mountains and far north even have frost.

The total population of the country was estimated at 7,012,642 persons in 1974 (Ministry of Finance and National Economy 1975:3). The estimated number increased to 16,948,388 persons in 1993, when the number of non-Saudi nationals were estimated at 4,638,335 persons (Ministry of Planning 1995:16). In 2000 the population's estimated at 20,846,884 persons. The estimate of Saudi citizens 15,588,804 or about 74.8%, with the number of non-Saudi nationals at 5,258,079 or about 25.2% (Statistical Year Book 2000:43).

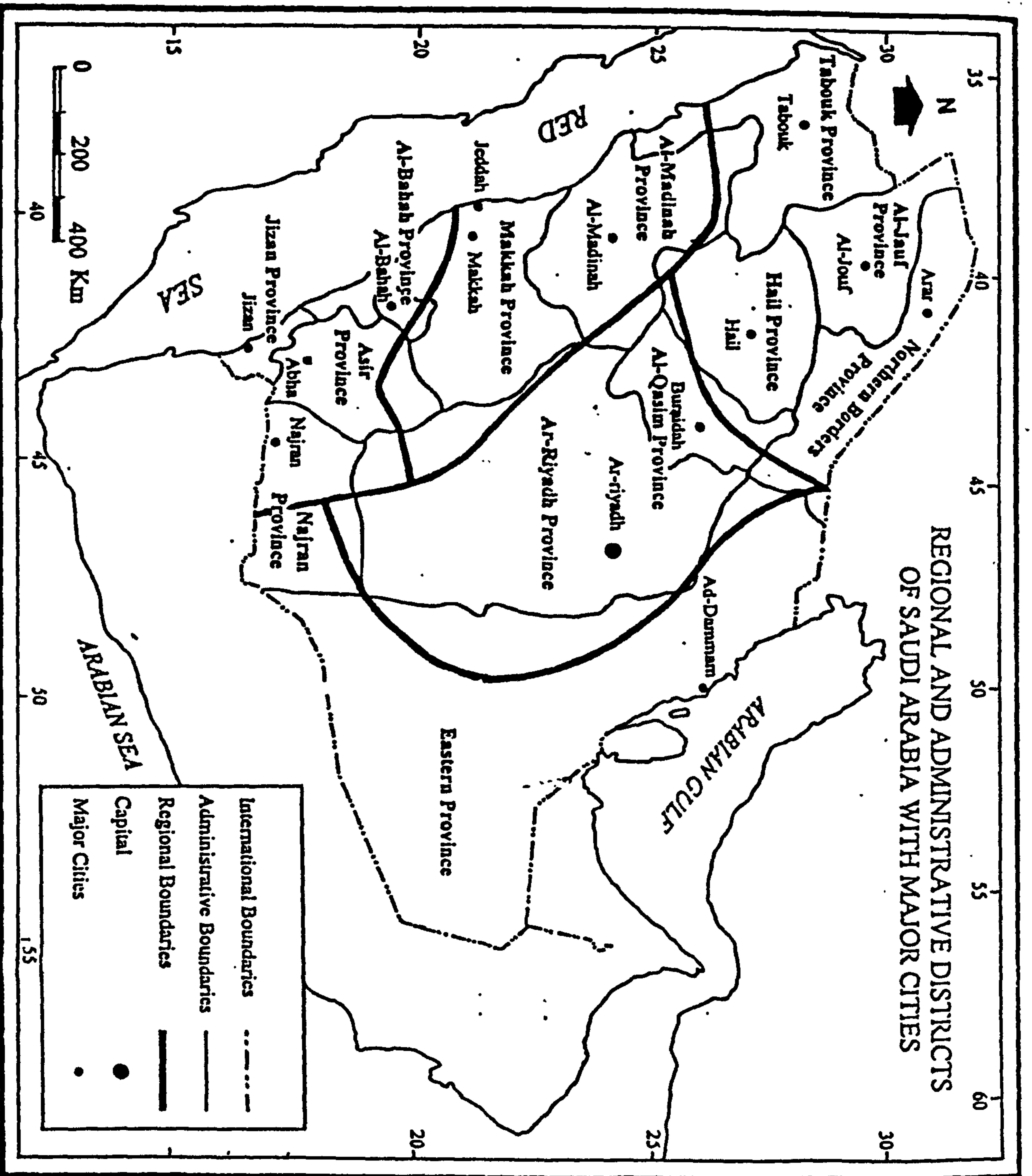
¹Before the discovery of oil in 1938, pilgrimage, commerce and trade were Saudi Arabia's major sources of income. There has been some exploration for minerals but few

1-This paragraph is based on the researcher previous study (Al-Abdullatief 1989 : 5).

commercial discoveries made other than oil. This natural resource rapidly became the most dominant source of revenue for the Saudi government after the end of the Second World War. It is oil which has had a great political, economic and social impact on Saudi society which has undergone a process of rapid development focused on health, education, communication, agriculture, water resources, and urban development. Future changes are certain to be even more profound. The difference between the traditional order and what is taking place now is enormous and social changes are taking place rapidly in Saudi Arabia. However, the rate and direction of change are not the same for all sections of Saudi society and for all stages of the country's development. The country has improved socially and economically. However, the issues around diet and health people's nutritional knowledge may not have kept pace with these improvements.

'there was a rapid change in the people's lifestyle. As a result, Saudi Arabians are now experiencing different kinds of nutritional problems. There is, for example a rise in obesity as revealed by the medical record in health services. This is in sharp contrast to the cases of under nutrition reported a decade ago. Thus although there might have been an increase in food choices because of the wide availability of the food supply, it is possible that these choices were not necessarily the right ones. This could be due to the apparent lack of nutrition knowledge because of limited education among the people'. (Al-Othaimeen 1991: 34-6).

The dilemma has now become two-fold. On the one hand in some parts of SA there still exists the problem of malnutrition and its associated cases of deficiency diseases, growth retardation, and communicable diseases, and on the other, there is the growing problem of diseases of affluence such as obesity, cardiovascular and other heart problems, and diabetes. This kind of situation reflects the social divisions and stratification of contemporary Saudi society. 'Before the discovery of oil, Saudi society was mainly composed of large nomadic communities, constituting about 25 to 30 percent of the total population' (Shean 1975) and much smaller settled communities. A small segment of merchants from the towns served these two communities at that early stage of development. As far as class hierarchy is concerned, at that time Saudi society consisted of unclear and not very conspicuous social strata, and the social differences within the population were not great. Following the influx of crude oil after the Second World War, Saudi Arabian state revenues



Source: Dept. of Geography, King Saud University, 2000. (Regional boundaries adapted from Al-Qabbani, 1984).

Figure (1-2)

increased tremendously. Arabian American Oil company (ARAMCO) employed a large segment of the Saudi population. To a great extent, the educational programme that was implemented by the state not only facilitated social modernization, but also, initiated development of the new Saudi middle-class. Al-Sultan (1988) suggests that 'Saudi society is now composed of three social classes, namely: an upper, middle and working class. Each class, however, is composed of several occupational categories and is divided into traditional and new segments. It is anticipated that the rise and expansion of the various Saudi social classes might well have an effect on diet and dietary habits. According to Al-Sultan the upper class consists of an elite of the royal family, the *ulama* (Muslim religious scholars) tribal chiefs, high government officials and high-ranking military officers; wealthy businessmen (big entrepreneurs, merchants, bankers, financiers and money exchangers) and big land owners. The middle class consists of the traditional middle class of shop keepers, real estate brokers, artisans, small entrepreneurs, etc; small farm owners and a new middle class within three main elements: recent college graduates in professional and administrative positions, military officers, and senior oil employees. The working class consists of a traditional working class of journeymen workers, farm workers, fishermen, nomads, and social security recipients; and a new working class of industrial workers and lower echelon employees in public and private sectors.

'The working class represents 79.3 percent of the population, the middle class 14.3 percent and the upper class only 6.4 percent' (Al-Sultan 1988:1).¹ This means that the class structure of Saudi society is pyramidal in shape. See figure 1-3. The emergence of this new class structure has produced a problem which is the withdrawal of the Saudi working class from lowly paid manual labour jobs, which has led to a high rate of expatriate labour. According to preliminary findings of the 1992 population census, more than four million (4,638,335) skilled and unskilled expatriates of several nationalities entered the country

¹-Al-Sultan's study seems to be the most comprehensive detailed, and thoroughly academic study of class structure in Saudi Arabia. The researcher has not come across a more recent study of such depth like this. Moreover this class structure seems to be the same today.

seeking job opportunities. (See table 1.1). Al-Sultan indicates that 'almost 60 percent of the employed labourers were expatriates while at the same time about 18 percent of the Saudi population were social security (welfare) recipients. Within the total labour force, slightly over 40 percent are Saudis, among which only about 7 percent are females' (1988:361). Furthermore, the demand for more expatriate workers is still on the increase. For instance, the Statistical Year Book 2000 indicated that 'the total expatriate labour in the Kingdom of Saudi Arabia was 5,258,079 of the total population of 20,846,884' (Statistical Year Book 2000:43).

Table 1-1 The percentage population distribution of Saudi Arabia by sex and nationality. (1992 Population Census)

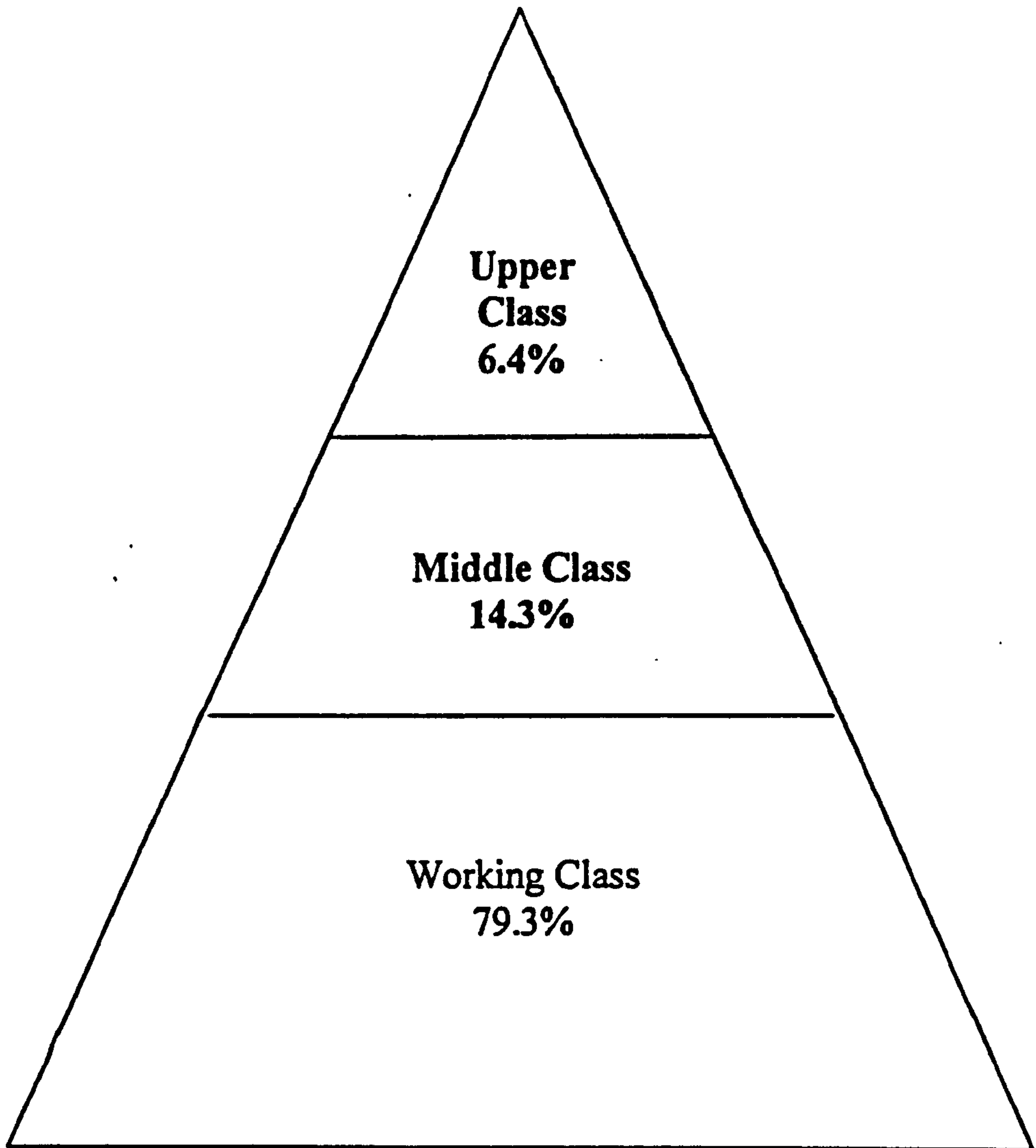
Nationality	Saudis		Non-Saudis		Total	
	No	%	No	%	No	%
Males	6215793	50.5	3264180	70.4	9479973	55.9
Females	6094260	49.5	1374155	29.6	7468415	44.1
Total	12310053	100	4638335	100	16948388	100

Department of Statistics 1994, Preliminary Findings of the 1992 Population Census Riyadh: Saudi Arabia.

Some analysts have claimed that the indigenous culture is the main factor in Saudi workers reluctance to accept manual jobs. Saad Edin, for example, pointed out that 'many native Saudis, especially with well-known tribal origin are reluctant to take up certain manual jobs that were at one time performed by slaves' (1982:102). This change was already noticed in 1963, by Arnold who discerned that:

'too many changes are taking place without enough thought about the consequences of the change. I am interested in yesterday and today and how they will affect tomorrow. Yesterday, this country had a unique culture. Backward, perhaps or underdeveloped, or whatever the current phrase, in terms of the twentieth century. But nevertheless, unique and to me, admirable; when I came here many years ago I was deeply impressed by the simple way of life and contentment of the people, despite their poverty' (1963: 168).

Saudi society of today is different from that of the 1960s. Many things have changed within the society and the following is a description of these in order to provide background for the explanation of the change which have occurred in the Saudi family's diet.



Al- Sultan, 1988: 356 •

Figure (1-3)

Saudi Social Class composition

Economic Change:

Since the discovery and export of crude oil, the economy has witnessed dramatic change due to increased national revenue. With the availability of huge funds, the country embarked on a development plan and elaborate projects were undertaken to strengthen the infrastructure and thereby to improve the living conditions of its people. In the 1950s Lipsky already offered a comprehensive picture of what had been taking place 'oil has had a great political, economic and social impact on Saudi Arabia. Future changes are certain to be even more profound. The differences between the traditional order and what is taking place is very great and for the present at least, change is occurring more rapidly here than in any other country in the Middle East' (1959:8). Saudi Arabia was, and still is, one of the ten largest oil producing countries. The following table shows the amount of crude oil production, which the country has been engaging in over the last 35 years. This has enabled the government to spend on its five developmental plans, which have ultimately contributed toward shaping changes in various sectors of the Saudi society.

Table 1-2 Output of Crude Oil between 1964-1999 (in million barrels).

YEAR	AMOUNT	YEAR	AMOUNT	YEAR	AMOUNT
1964	694.13	1976	3139.28	1988	1890.10
1965	804.94	1977	3357.96	1989	1848.50
1966	948.57	1978	3029.90	1990	2340.50
1967	1023.84	1979	3479.15	1991	2963.00
1968	1113.71	1980	3623.80	1992	3049.40
1969	1173.89	1981	3579.89	1993	2937.40
1970	1386.67	1982	2366.41	1994	2937.90
1971	1740.68	1983	1656.88	1995	2928.54
1972	2201.96	1984	1492.90	1996	2965.45
1973	2772.61	1985	1158.80	1997	2924.28
1974	3095.09	1986	1746.20	1998	3022.27
1975	2582.53	1987	1505.40	1999	2761.10

Statistical year Book 2000:413.

Table 1.3 Government's Budget 1986-2000.

Year	Appropriations	Revenues	Year	Appropriations	Revenues
1986	200,000,0	200,000,0	1993	196,950,0	169,150,0
1987	170,000,0	117,280,0	1994	160,000	160,000
1988	141,200,0	105,300,0	1995	150,000	135,000
1989	-----	-----	1996	150,000	131,500
1990	143,000	118,000,0	1997	181,000	164,000
1991	143,000	118,000,0	1998	196,000	178,000
1992	181,000	151,000,0	1999	165,000	121,000
The statistical indicator, issue 20. 1995:95. _____, 1999:95. _____, 2000:93.			2000	185,000	157,000

This huge wealth has contributed to improvements in the social, educational and health sectors, for example, the opening up of many schools and hospitals. In addition personal wealth has increased. In 1993, Al-Munahi stated that about 70% of his sample reported their monthly income to be within the range of 8,000 to 12,000 Saudi Riyals. Ten years previously about 60.7 percent indicated their income had been only 300 to 600 SR. The government started five-year development plans by allotting funds to a number of projects, which would help the country to develop and continue to achieve progress year after year. These plans, which started in 1970, contained definite strategies to improve economic resources, manpower, the social sector, and the infrastructure. Also, one of the goals of the plans was that all people in society should benefit from health care and medical services. Accordingly new hospitals and health care centres were built. Tables 1-4 and 1-5 illustrate the development and increase in health services.

Table 1-4 shows the increase in health services in Saudi Arabia between 1970-2000.

Health Services and Staff.	1970	2000
Hospital beds	9,039	45,729
Nurses (Males and Females)	3,261	66,948
Technical Assistants	1,741	40,422
Physicians	1,172	31,222
Primary Health Centres	591	2,474
Hospitals	74	318
Emergency Centres	37	168

1- Al-Riyadh, daily newspaper, No.6421, 1/1/86:4.

2- Ministry of Planning. Statistical year Book 2000: 142:198-99.

Table 1-5 Hospitals and Health Centres between 1986-2000.

Year	No. of health care Centres	No. of Private Hospitals	No. of Ministry of Health's Hospital
1986	1431	41	141
1987	1437	43	157
1988	1477	55	162
1989	1639	61	162
1990	1668	64	163
1991	1692	66	166
1992	1702	72	170
1993	1707	75	174
(1) 1994	1719	72	173
1995	1725	74	175
1996	1731	75	176
1997	1737	84	180
(2) 1998	1751	87	182
1999	1756	89	186
(3) 2000	1766	91	188

1- The statistical Indicator 1995: 70.

2- Statistical year Book 1999:106.

3- _____, 2000:142:191.

Although medical care is free health services are not totally controlled by the public sector. About 15% of health services and facilities are handled by the private sector, complementing those of the Health Ministry. Patients are sent abroad at the expense of the government, if the facilities are not available in Saudi Arabia itself. Among other significant social and economic achievements are the establishment of development banks which provide loans only through repayment funds since 1975. Three funds will be exposed briefly as follows:

1- The Real Estate Development Fund provided Saudi citizens with interest-free loans of approximately 91.5 billion SR. to build houses. These loans were payable in 25 years. In this study for example, (see Chapter Three) the majority of respondents 53.2% own their houses with only 6.5% of the respondents were living in government houses. Any Saudi who owns land is eligible to apply for a loan of some 80,000 dollars to cover the cost of house and building construction. Since its establishment in 1975 this fund has helped

greatly in creating healthy environmental conditions, which were not found in the traditional mud houses of 30 years ago.

- 2- The Industrial Development Fund, has provided investors with loans of approximately 49 billion SR. to start projects and industries.
- 3- The Agricultural Bank has provided farmers with approximately 22 billion SR as loans to buy machines, seeds and fertilizers. (National Guard Magazine 1989 :6). The amount of loans between 1992-1996 was 35,45697000 SR (Statistical Year Books 1996:410). Agriculture is the second important source of planned development for economic diversification. By 1987 agricultural products represented about 30% of Saudi non-oil exports compared to only 3% in 1975. Correspondingly imports of food products decreased in 1986 by two billion dollars . (The Embassy of Saudi Arabia 1989:6) The total area of cultivation has increased in ten years from 360 thousand acres to 5.5 million acres (National Guard Magazine 1989). In 1995, the number increased to 6,360,218 acres (Statistical Year Books 1996:435). But in 2000 the number decreased to 2,985,760 acres. (Statistical year Book 2000:521)

Industrial production also, significantly increased in 1978 there were 1,017 factories but by 1987 there were 2,061 factories (Ministry of Finance and National Economy 1987). By 1994 this number had increased to 2,355. (The Statistical Indicator 1995:52). In 1996, the number was 3,300 (Statistical Year Book 2000:367). Along side these achievements the government subsidizes several products such as gas and electricity. It also provides people in low-income groups with social security to enable them to improve their living conditions. This wide variation of economic development has had an important effect in bringing change to Saudi Society in general and to the family in particular . The family is no longer a food production unit as this role has now transferred to other sectors of the society. Family members are enjoying employment outside the family domain, and now that their monthly income has increased, their standard of living has improved. Moreover, many people have left their villages looking for a better standard of living in towns and cities, where employment opportunities are more abundant. Also,

opportunities for more advanced educational attainments are now sought by both Saudi boys and girls.

Mass-media and communication system:

Globalization has seen mass-media and new communication systems playing an important role, not only in connecting different cultures with each other, but also, in shaping people's ways of life within their society. Thirty years ago, Saudi Television started to broadcast, but only to a small part of the country. Now it covers all parts of the country. Saudi Television has two channels: one in Arabic and the other in English, offering its audience a whole range of social, religious, cultural, political, recreational, entertainment and other programmes. Mass-media now enables Saudi people to see the world around them and to be exposed to other people's experiences. In addition to this, mass-media widens access to knowledge for those people who did not have the chance to complete their education and thus has contributed to decreasing illiteracy through intensive educational programmes, and the wide spread use of satellite. Many TV programmes are directed specifically at the family including children. Saudi families are therefore, becoming more familiar with what is happening in the world around them and, thus the knowledge gained from the media could be considered as a new element in present day Saudi family life. In addition to that, local newspapers and magazines reserve pages for family health matters. 'the print media in Saudi Arabia has also improved. In 1913, there was only one weekly newspaper, but by 1987 there were 68 published periodicals' (Ministry of Finance and National Economy 1987:10) by 2000. 'the number has increased to 88' (Statistical Year Book, 2000:241-43).

Improvement in the transportation system has also connected Saudi people to each other and to the outside world. Intensive Road construction, across most of the country, has enable people to travel from one part of the country to another easily, and has linked the country with other countries.

'in 1951, Saudi Arabia constructed its first paved 148 miles road. This figure increased to 19,155 miles of main roads and 39,691 miles of rural roads in 1985. The developmental plan (1985-1990) intended to increase the main roads net work by over 1,240 miles, the secondary roads by over 2,046 miles and the rural roads by 20,336 miles. (Saudi Arabia, 1989) . In 1995

the number had increased to 35253 main roads and 95967 rural roads' (The Statistical Indicator 1995: 108)

Air transportation has also, helped Saudis to extend their contact with other countries and cultures. 'the Saudi national airline started its services in 1945 with a fleet of three airplanes, and in 1985 it had over 80 airplanes flying inside and outside the country' (The Statistical Indicator 1985) 'the number increased to 104 in 1992' (United Horizons International L.t.d. 1994: 355).

Finally telecommunication links have also expanded significantly from 130,000 lines in 1975 to 3,848,914 in 1999. (Statistical Year Book 1999:365) together with the introduction of the mobile telephone system. This service increased from 280 lines 1983 to 22, 855 lines in 1987. (Ministry of Finance and National Economy 1987). In 2000, there were 1,375,881 telephones (Statistical Year Book 2000:420)

The telex system now provides many services to Saudi people as well as to financial, commercial, and industrial companies both national and international, linking cities and towns with countries all over the world. 'Saudi Arabia is considered the 21st largest user of telex services in the world' (Saudi Arabia 1981: 10). Between 1992-96 the number of telex lines was 41,937 (Statistical Year Book 1996:355). However, recent technological advances has seen facsimile and internet rapidly replacing telex traffic. Improvements and development in the communication system, mass-media and transportation helped bring about changes in Saudi life.

Technological Impacts:

The technological age, has had a number of implications for social change in Saudi Arabia since Saudi society had very little indigenous technological ability. The country has therefore, been importing technology from other countries, particularly from the West, and the Saudi family is one sector of the society that has been especially exposed to different kinds of technological devices for carrying out household chores through the introduction of modern cooking and other household appliances. In addition, the government is engaging in tremendous effort to educate and train people to use technological devices, whether in industry or at home, by offering employees training programmes. For example, computers are now available with Arabic

language capabilities and instructions on how to use, operate, and assemble them. Safety instructions, written in Arabic language, for cars are also available. Saudi society is becoming increasingly receptive to technological innovation and attitudes towards technology have become more positive, with people now willing to acquire as much as they can from technological capabilities, especially those uses that are relevant to Saudi society. This can be seen, for example, in the increased enrolment in technical and vocational schools, which Saudis attend in order to be eligible to work and master technology in the society. The effect of technological change can be seen clearly on the Saudi family and family lifestyles. The relationship between technology and education in society is a reciprocal one. Education gives people the ability to harness and control many technological devices, while technology in many cases helps in facilitating the educational function. A Saudi house today contains several appliances such as cooking appliances, washing machine, dish washer and vacuum cleaner, and the use of these appliances helps Saudi women to save time and effort that can be invested in other activities that will benefit them and their families. In the educational sphere, technology enables female university students to be taught through closed circuit television by male teaching staff in Saudi universities. It is one of the most useful applications of technology to solve the shortage of female teaching staff, since female students cannot, for cultural reasons, be taught face to face by male staff. The exception, of course, is in the medical profession. Hospitals, clinics and medical services have also benefited from the availability of new technology which means that families no longer have to travel abroad for medical care. In Saudi Arabia, today, there are several hospitals, such as King Faisal Specialized Hospital, Riyadh Armed Forces Hospital and King Khaled Eye Specialist Hospital, applying the most advanced technological inventions in treating, operating and consulting with their colleagues abroad about their patients. After treating very briefly the technological impact on the Saudi family, it is worthwhile to discuss education in Saudi society, as it could be assumed that it is a crucial factor in raising nutrition and health awareness.

Education:

Education is a very important social institution in increasing a nation's prosperity. In Saudi Arabia education has improved tremendously over the last forty years. In the past, education was restricted to religious education for both boys and girls. There were no formal schools. Boys used to study in the mosques and the girls with a woman, in the teacher's house. Students learned to memorize the Quran and studied the Arabic language. Nowadays, modern scientific education, along with the traditional religious education, is the focus of the new education system. Education in Saudi Arabia is under the responsibility and supervision of several governmental agencies. The Ministry of Education is responsible for boys' education, while the General Presidency for Girls' Education is responsible for girls' education, because gender segregation is part of Islamic teachings. Along with these two main agencies, several other ministries and agencies are responsible for providing education for their staff and their families. Among these agencies are the National Guard, Ministry of Interior, Ministry of Labour and Social Affairs, and the Ministry of Defense. Higher education can be sought through seven universities under the supervision of the Ministry of Higher Education and many other colleges for girls are under the supervision of the Presidency of Girls' Education. Furthermore, most of the universities now have separate sections for girls. 'In 1959 the number of schools for boys was 469' (Abdulwasa 1983) and when the formal education for girls was introduced in 1960 'the number of schools was 52' (Ministry of Finance and National Economy 1984). However, by 1987 the number of educational institutions for both boys and girls had risen to 15,353 (Ministry of Education 1988). Also the number in the 1950s had increased from 42,000 male students. (Al-Munahi 1983) to 1,416,594 in 1987 (Ministry of Education 1988) in 2000 the number increased to 2,212,742 male students. (Statistical Year Book 2000:88). Similarly female students numbers had increased from 32,391 in 1964 (Al-Omari 1984) to 1,066,207 students in 1987 (Ministry of Education 1988) In 2000 the number increased to 1,996,512 female students (Statistical year Book 2000:88). The significant effect education has had on family life can not

be overstated. When the formal education system was started in 1953 most teachers were from other Arabian countries. As time went on, however, the number of Saudi teachers increased and teachers from other Arabian countries were replaced in most schools by Saudi graduates year after year. In 1982, the number of Saudi teachers was only 54,962 but it had increased to 93,909 by 1987. (Ministry of Education 1988). By 2000 there were 303,327 Saudi teachers. (Statistical Year Book 2000:89).

Higher education is another domain where considerable development has taken place. There are seven universities along with 11 colleges for girls. They offer undergraduate and graduate education in several majors. The number of enrolments in these colleges in 1973 for both males and females was 11,337 (10,002 males and 1,335 females) and the number of college was 19 for males and one college for girls (Ministry of Education 1982). In 1987, fourteen years later, the number of enrolled students had increased nine times to 105,896 students; 62,785 were males and 43,111 were females (Ministry of Education 1988: 5). In 1999, the number was 371,522 students; 169,312 males and 202,210 females. (The Statistical Indicator 1999:150).

¹In the early stages of the government developmental plans hundreds of young bright students were sent abroad to seek knowledge and education in order to return to take part in the execution of the developmental plans. These students were on scholarships where the government paid all expenses and provided them with jobs after they completed their studies. Although numbers increased in the early years of development, the number of students has started to decrease as a result of the expansion of higher education institutions in the country offering more places for postgraduate courses and programmes. In 1973 the number of Saudi students abroad was 2,574 males and 219 females, and by 1982 the number has increased four times to 10,943 males and 968 females (Ministry of Education 1982) but, by 1996 the total

1-The development system in the country also pays attention to those disabled people who are not attending regular schools. 'For these people education is available every where in the country, and it includes 30 institutes which provide their services to blind, deaf and dumb and the mentally retarded' (Ministry of Finance and National Economy, 1987) Adult education gives those who did not attend schools when younger the opportunity to learn in the evening classes and schools.



number had dropped to 3,412 students 2,533 males and 879 females (Statistical Year Book 1996:83).

Table 1-6 The Annual Growth of Financial appropriations for Education 1970-2000 in Million.

Year	Saudi Riyals	Year	Saudi Riyals
1970	5981.1	1985	23,031.7
1971	666.3	1986	18625.3
1972	1,150.1	1987	22428.9
1973	1,591.5	1988	22239.9
1974	2,232.7	1989	22504.9
1975	3,760.3	1990	24584.3
1976	12,941.0	1991	29200.6
1977	13,977.5	1992	29594.0
1978	15,155.0	1993	30342.0
1979	17,396.0	1994	27822.4
1980	21,293.1	1995	25,623.9
1981	23,690.0	1996	27,536.2
1982	29,740.7	1997	40,067.9
1983	26,090.3	1998	43,867.2
1984	28,598.4	1999	41,274.8
		2000	47,6019

(1) Ministry of Finance and National Economy: 1985.

(2) The Statistical Indicator, 1995: 133.

(3) _____, 2000:135.

To meet the shortage of female school teachers, many teacher training institutions were opened and gradually Saudi female teachers replaced the expatriates. By 1988, most regions had reached the stage of self-sufficiency in school teachers for elementary schools. (Presidency of Girls' Education 1982). In addition to general education, several other types of education are now available for women only. These are of a practical and vocational nature where women learn various kinds of crafts and vocational skills. Its purpose is to provide skilled and qualified women in jobs which will be beneficial to the women themselves as well as to their country. Among these institutions are health institutes, nursing schools, tailoring centres, and special education for the blind, deaf, dumb and retarded (Presidency of Girls' Education 1982:2).

Internal Migration:

Another source of influence which has stamped its impact on Saudi society is internal migration. After the discovery of oil, people started to migrate from nomadic rural areas and towns

to urban cities, looking for jobs and a better way of life. The number of urban residents increased while the number of Bedouins in the rural areas decreased. Al-Abbodi (1981) estimated that 'in 1965, 50 percent of the population in Saudi Arabia was Bedouin, and that by 1972 this had decreased to about 26 percent' (1981:10). Accordingly urban centres expanded at the expense of Bedouin' settlements. The Government started establishing these settlements in 1926 in several areas of the country, and provided services in order to encourage the Bedouins to settle. The Bedouin family is now enjoying a new life integrating into a society which is very different from that of the past. The new generations of settled Bedouins have adapted, occupying important positions and jobs in many sectors. The Bedouin family has accommodated to urban life. A complex life shaped and dominated by technological change, which has undoubtedly brought great change. With this internal mobility and migration some important changes can be noticed in relation to food and dietary habits which will be explored later.

Culture Contact:

Prior to the discovery of oil in 1938, most Saudi people did not have the chance to be in contact with other people, except those who were living in the Western region, where the Holy Places are located (Makkah and Madinah). They had contact with Muslims from Islamic countries who come every year on pilgrimage. However, the other parts of the country were in virtual isolation because of the vast desert land making it difficult for people to move. Moreover, traditionally the activities of the people were trade, agriculture and animal herding and so they did not need to travel to other countries. However, after the discovery of oil early in the developmental plans, many people from different countries started to come to the Kingdom to work. Most of these people brought their families with them, and Saudi families mingled with many of these families. The social and cultural isolation of the country thus ended. Because of the shortage in the Saudi labour force, and the government's strategy to accelerate development in the country, the foreign labour force increased, and by 1992 there were 4,638,335, non-nationals in Saudi Arabia. Most of these people come from Asia, Africa, Pakistan, India,

Bangladesh, Thailand, Philippines, Indonesia and Sri Lanka. Although working in the urban areas expatriate labour is also, found in rural areas where people work as farmers in the fields, and in the villages herding livestock. Many non-Saudi workers are however, employed in the family: as servants, drivers, housemaids, nannies and gardeners. In 1981, the number of workers amounted to 70527 persons (Ministry of Interior Statistics 1981) which may have had an impact on the Saudi diet and dietary habits since foreign workers bring with them some of their food cuisine and dietary habits. The nutritional and dietary effects of foreigners on the Saudi diet and dietary habits is well manifested in Gibbon's study 1988 which will be explored in detail in Chapter Two. Al-Othaimen in his study (1991) stressed this point

' the number of international expatriates working in the Kingdom had reached nearly 20% resulting in some changes of the Saudis' food habits also restaurants and other eating places mushroomed so that more people now ate outside the home and interacted with other cultures resulting in an exchange of customs and traditions, especially those are related to food. As more new products came in from the foreigners' native countries and flood the local market, methods of cooking changed, new tastes were acquired and an entirely new range of food habits and manner of eating came in existence' (1991:33).

Saudi people are not only influenced by expatriate workers who live with them, but also by travelling abroad to study or to spend their vacations outside the country. This happens particularly in summer time when there is no school and the family can travel together. Visiting other countries has introduced many new cultural aspects into Saudi life, in general and in diet and dietary habits in particular. This confirmed by Basha's study 1988 as will be discussed in Chapter Four.

Food Retailing

As indicated earlier the aim of this study is to explore the relationship between dietary changes and health. And in this context the rapid spread of new big supermarkets in major cities can be seen as a new and significant feature in the Saudi economy. For example, over the past twenty years the market for consumer-ready food products has been increasing and becoming more diverse. Twenty years ago there were few supermarkets and the number of fast food restaurants was minimal as Haseebullah indicated:

'Currently there are more than 230 large modern western-style supermarkets, hundreds of corner grocery stores and most major American fast food chains are found in great

numbers in the country. The number of cold storage warehouses and food processing plants has increased significantly over the past 3 years. The number of supermarkets, commercial malls and other self service outlets is on the rise throughout the Kingdom, offering quality products and a wide range of services. A supermarket outing is now a major form of family entertainment' (Haseebullah 1996:3)

Many of these malls have large play areas for children and thus the malls offer the Saudi family both recreation and convenient shopping and supermarkets increasingly cater for a multi-choice service in terms of foodstuffs on sale. This new situation is not only taking place in Saudi Arabia, but is a worldwide phenomenon. Beardsworth and Keil asserted that:

'a visit to any supermarket, with its elaborate displays of food from all parts of the world, is a readily available demonstration of the choice and variety available to the modern consumer. The supermarket itself may be considered one of the most successful outcomes of the development of modern systems of food production and distribution, indicating the extent of control over quality and the reliability of supplies' (1997:32).

In summary therefore, Saudi society has undergone huge social change manifested not only in broad macro-economic terms but also, at the micro and personal level as social scientists have shown. Social change is far reaching and effects all socio-cultural and environmental aspects of the society. Diet, dietary habits and health are no exception. Within the last 30 years Saudi society has changed from a simple rural or nomadic way of life to a new complex, modern and urban way of life. However, Saudis intensity of change has not take place without some negative consequences as evidenced by the increase in welfare diseases such as: diabetes, hypertension and obesity etc. This thesis takes up this issue in its concern about the possible negative impacts of social change on the Saudi diet, dietary habits and health. The next section considers therefore, nutrition in contemporary Saudi society.

Nutrition and Malnutrition in Contemporary Saudi Society:

Abundance or plenitude of food in a society does not necessarily mean that malnutrition does not exist as the WHO makes clear. 'Malnutrition of affluence is the major cause of morbidity and mortality among the affluent populations of all the Gulf countries and of the developed countries where prevalence levels of these clinical disorders are increasing at alarming rates in some countries' (WHO 1990:25). Even when food is available, traditional eating habits that are deeply ingrained in people's culture will influence their food consumption pattern

to the extent that their diet may become deficient or lead to ill health of different kinds. Al-Awadhi (1984) puts forward three characteristics of an unhealthy diet : ' an unhealthy diet is one which lacks nutritional value and is distinguished by the following peculiarities:

- Energy is the dominant element among food components, because it consists of a high proportion of fats and carbohydrates which could cause the increase of cholesterol that ultimately affects the arteries and heart.
- Such types of food lacks proteins, vitamins and minerals.
- It contains high degrees of starch and sugar which leads to many health problems like diabetes, tooth decay, obesity, and other diseases' (1984: 30-1).

Hussain (1992) offers a different account of the effects of an unbalanced diet on people's health. For him, an unbalanced diet has a negative impact on human health, in the following ways:

- It leads to a number of diseases which particularly affect children.
- High mortality rates occur among children due to the development of serious disease.
- It leads to slow growth among children.
- It leads to the weakening of mental and physical potentialities, as in the case of excess of fatness or frailty or acute anaemia. (Hussain 1992:63-4).

At the outset, it is useful to define the concept of a balanced diet. According to Sebai 'a balanced diet is the diet, which comprises various types of elements such as: proteins, carbohydrates, fats, vitamins, minerals dietary fibre and water. This diet maintains the nutritional elements required by the body' (1975:30). But an up to date and comprehensive definition is worthwhile to be added. It is a definition given by Mahan and Escott-Stump as the following: 'balanced diet is one that meets all the nutritional needs of an individual for maintenance, repair, the living processes, and growth or development. It includes all nutrients in proper amounts and proportion to each other' (1996: 331). Smith *et al.*, for example, offers the following advice in order to have and maintain good dietary habits:

'eat fresh rather than preserved, packaged or convenience foods. Eat plenty of vegetables and fruits, when raw or lightly cooked, they retain a higher nutritional value. Eat whole grain products including whole meal bread. Cut down consumption of red meat, instead, eat fish, poultry and pulses, keep the fat content of your diet low and use polyunsaturated fats and vegetables oils rather than saturated fats. Cut down on sugar in all food' (Smith *et al.*, 1990:353).

'nutrition is the scientific study of food and the processes by which it is digested and assimilated. A good diet supplies adequate but not excessive quantities of proteins, carbohydrates, fats, vitamins, minerals, dietary fiber and water. The basis of a good diet is variety because no one food contains all the nutrients we need. The daily diet should include food from each of the four basic food groups: milk and milk products, vegetables, fruits, breads, cereals, meat, eggs and pulses. Personal requirements of nutrients and energy vary, depending on individual body size, age, sex and lifestyle' (*Ibid*:738).

The Food Guide Pyramid of the U.S. Department of Health and Human Services, 1989 is in line with the above concept, and is shown in figure 1-4. However, we have to note that what constitutes a healthy diet is subject to change and fashion overtime and there is still much confusion about what exactly is "good" for people to eat. This kind of argument will be discussed more fully in Chapter Two. Here I outline the pattern of disease in contemporary Saudi society, which many studies suggest are the result of changes in dietary habits, as Alwan notes 'Saudi Arabia is a Middle Eastern country that has gone through significant change in nutritional and lifestyle habits over the last 30 years. Such changes are expected to have an impact on the magnitude of chronic diseases in the society, among them obesity' (Alwan 1993: 24-34) Osman and Al-Nozha have also, pointed to the relationship between dietary change and increase in diseases:

'hypertension, hypercholesterolaemia, diabetes mellitus and obesity are well established atherogenic risk factors. The rapid socio-economic development during the past 3 decades in Saudi Arabia has been accompanied by drastic lifestyle changes. Diet may be one of the fundamental components of lifestyle contributing to increased risk of coronary heart disease. It is evident that Saudis' consumption of food rich in animal, protein, fat and sodium has increased' (Osman and Al-Nozha 2000:466).

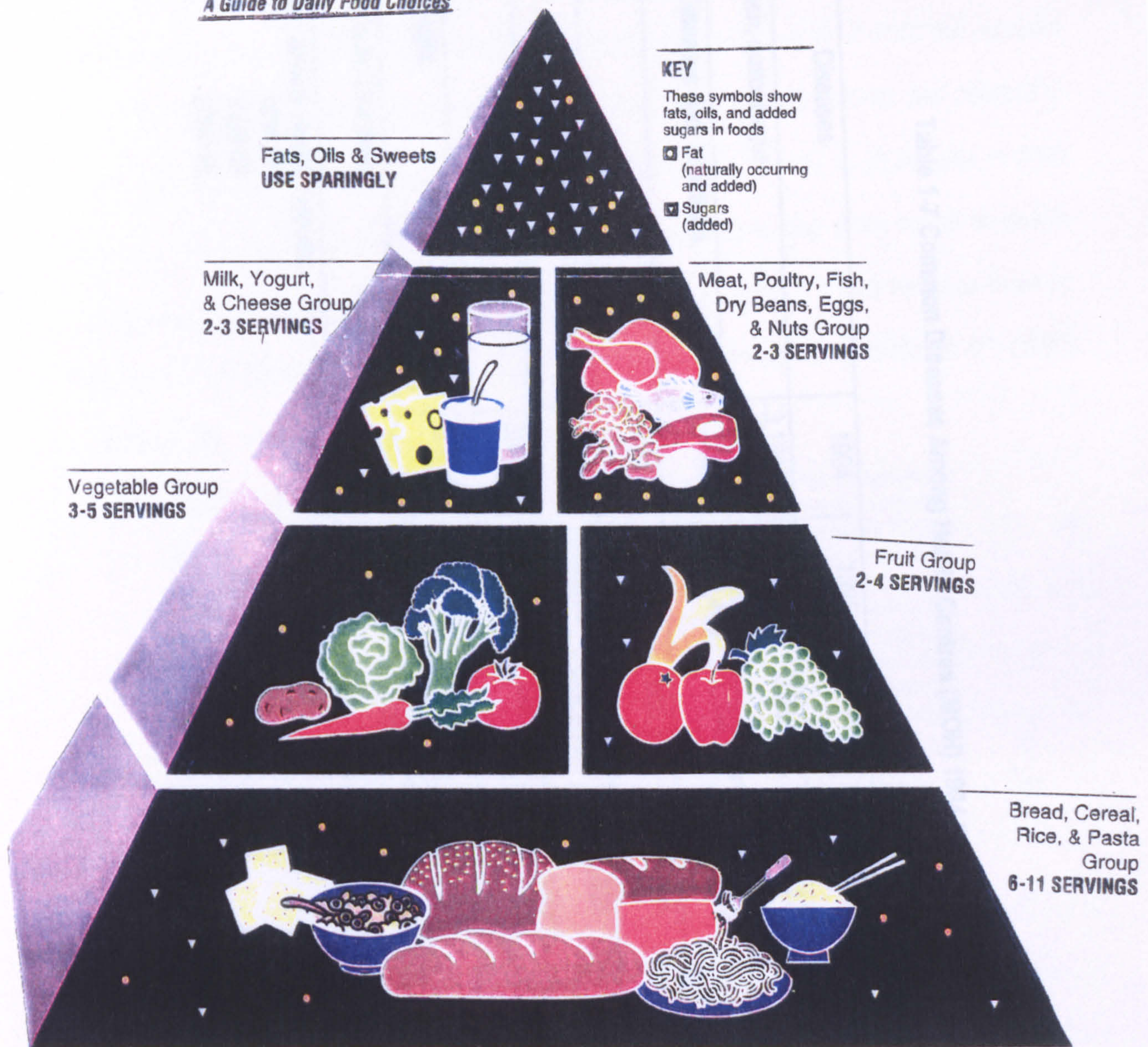
As shown in table 1-7 there has been such an increase in heart diseases and hypertension in Saudi society. Also, Majdi Yacob the world heart surgeon based in London affirmed this fact in a report in Al-Wattan daily newspaper that ' Saudi Arabia is the highest world country in heart diseases, because of (1) very low physical exercise (2) the diet which is high in fat, cholesterol and fast food (3) smoking ' (Al-Wattan No.582. 4/5/2002:7). The increase of heart and blood

vessel diseases does not only exist in Saudi Arabia, but also, is prevalent across in the Arab world as Musaiger (1997) indicates:

'one of the most primary source of heart diseases in the Arab World is the high intake rate of fats, cholesterol, lack of exercises, diabetes, high blood pressure and smoking. Heart diseases, in the Arab world, are now one of the primary causes that lead to death among adult. The rate is 30% of the total mortality rate in the Gulf countries, Egypt, and Jordan' (1997:74)

FOOD GUIDE PYRAMID

A Guide to Daily Food Choices



SOURCE: U.S. Department of Agriculture/U.S. Department of Health and Human Services, 1989: 345.

Figure 1-4

Table 1-7 Common Diseases Among Health Centres (MOH) 1994-2000.

Diseases	1994	1995	1996	1997	1998	1999	2000
Diseases of stomach, oesophagus.	3,190,859	3,181,882	3,063,083	3,436,520	3,261,603	3,595,600	2,555,947
Dental and Gum Diseases and Intestines.	1,490,719	1,426,448	1,394,667	1,532,438	1,408,690	1,656,536	1,353,823
Diabetes Mellitus.	720,577	793,120	856,378	990,346	970,842	970,989	859,827
Hypertension.	487,402	530,896	550,942	632,826	650,202	646,839	558,120
Anaemia.	330,213	308,782	347,419	385,364	387,903	398,138	322,113
Intestinal Helminthiasis.	258,429	271,310	282,182	313,223	296,300	328,828	212,897
Infectious And Parasitic Diseases.	232,757	215,403	236,085	273,934	275,272	278,831	165,809

Ministry of Health , Annual Health Reports:

1994:57

1998:46

1995:61

1999:83

1996:19

2000:95

1997:80

Table 1-7 shows that the number of patients of (MOH) health centres decreased in the year 2000 compared to previous years. Feasible justification of this situation might come from the fact that many Saudis tend to prefer seeking medical treatments in the private health sector and this appears to be on the increase. For example, in 1987 the numbers of private hospitals, health centres and clinics were (43), (272) and (607) respectively, while in 2000 the numbers were (91), (708) and 793 respectively. (Annual Health Reports 1987: 340-63 and 2000:181). Also, the Saudi population increased from 7,012,649 persons in 1974 to 20,846,884 in 2000 placing strong pressure on (MOH) hospitals and health centres forcing many well to do people to go to private health sectors since they can afford such treatment. There has also been an increase of cholecystectomy rates in Saudi Arabia. A study conducted by Tamim *et al.*, (1990) showed that:

'gallstones have become increasingly prevalent in Saudi Arabia, where cholecystectomy is now one of the commonest major abdominal operations. 2854 people underwent cholecystectomy in the 14 hospitals of the country's Eastern Province in the years 1977 to 1986. During this period the overall frequency of cholecystectomy increased by 97.8%, a finding not explained by the 67% increase in population or the 87% increase in other operations. Simultaneously, the average daily individual consumption of total calories, fat, and sugar increased by 81% , 197%, and 164%, respectively, and consumption of high-fibre grain fell by 75%. This striking increase in the frequency of cholecystectomy, which presumably reflects the incidence of gallstones, cannot be explained by demographic changes and seems more closely linked to the concomitant changes in dietary habits' (1990:50).

That these changes may be diet effected is suggested by Musaiger (1998):

'since ancient time the Arab countries traditional diet was basically a mixture of wheat and legumes. Fruit and vegetables were also commonly consumed. However, the rapid changes in lifestyle during the past three decades have led to great changes in food and nutrition status in the Arab countries. The average per capita energy intake increased by 30% and fat intake by 45%. The largest increases in food consumption were seen in sugar, fat and oil, red meat and poultry. Consequently the trend of diet-related diseases has changed. The prevalence of diabetes, heart disease, hypertension, cancer and obesity has increased dramatically especially in the Arab Gulf countries, Jordan, Tunis, Egypt, and Lebanon. At the same time micronutrient deficiencies such as iron-deficiency, anaemia, iodine deficiency disorders and vitamin D deficiency are common in most Arab countries' (1998:86).

Moreover, Pellett (1998) agrees and argues that:

' by the 1950s, evidence was accumulating that the high rates of premature deaths from some of major chronic diseases could be related to diet. Originally this was thought to be a problem only in the industrialized countries but, as medicine conquered infection diseases, the phenomenon became recognized as existing world-wide. In recent years this has become of major importance in many of the more affluent countries of the Middle East. The major nutrition-related degenerative diseases include obesity, diabetes mellitus, cardiovascular diseases and certain cancers. Many associations have been demonstrated between these diseases, diet, notably excess intake of food energy and fat, especially

saturated fat and cholesterol as well as life style factors such as smoking emotional stress and lack of physical exercise' (1998:55).

Diabetes has now become a common disease in Saudi society, as noticed in table 1-7. According to a report in Al-Riyadh newspaper 'diabetes has noticeably increased in S.A where there were 2,000,000 patients who were suffering from diabetic disease in Saudi Arabia' (Al-Riyadh, No. 11103, 17/11/1998:34). In addition to these high figures there were many unrecorded diabetes cases as Al-Rubeaan indicated that:

'14% of Saudis have diabetes, but they do not know about it because they do not have medical check-ups or visit the doctor. In addition, there are many misconceptions regarding diet that are generally accepted by people, especially the elderly. They hold the conviction that dates are a good diet and do not affect their general health, although the opposite is, in fact true. Excessive eating of dates will have adverse effects on their health. For instance, it may increase the level of blood sugar' (Al-Hayat newspaper, No. 13031 7/11/1998:4).

El-Hazmi et al., (1997) emphasized this point as they stated 'diabetes mellitus is a health problem in Saudi Arabia because of the high prevalence of obesity as a result of the Saudi diet which includes a high intake of carbohydrates in the form of bread, dates, sugar, potatoes etc.'(El-Hazmi et al., 1997:302-6) Moreover, Khoja et al's study (1996) showed that 'the prevalence rate of diabetes in their study sample was 20% and cardiovascular disease was 13% for men and 17% for women' (1996:2) Also (K.A.C.S.T) elaborating in more detail on the incidence of this disease where it reaches 27% in some parts of Saudi Arabia' in (Al-Hayat No. 13419, 4/12/1999:19). Another confirmation of this fact came from 'Bila Hidoud' Al-Jazeera TV channel, where an interview was conducted with Deputy President of the World Health Organisation for the Near East and Mediterranean basin countries, reporting that 'the Kingdom of Saudi Arabia spends 51 billion Riyals on diabetes treatment and preventive programmes within 38 years. Most surveys about prominence of diabetes indicate that this illness represents a health problem particularly in developed countries. 13% of people over 55 years of age are affected.' (MOH1992). This situation does not only exist in Saudi Arabia, but also, prevails in Gulf countries. More generally Musaiger points out 'the incidence of diabetes mellitus is increasing in Gulf countries, and makes a high demand on the existing health services' (1987:160). Musaiger (1997) suggests that:

'nutrition is considered as a causal factor of diabetes mellitus. Imbalance of nutrition and lack of high fiber in food and rich in sweets encourages the increase of diabetes mellitus in the Arab World where the rate reached 20% among people who are over 15 years of age. The highest level of diabetes is in the gulf area where the rate is 20%.due to the increase of the living standard and the poor dietary education in addition to lack of physical exercises. Diabetes mellitus is a primary source at many health problems such as cardiac diseases, renal failure, high blood pressure and poor vision among the elderly people' (1997:148)

Also, in the arabian countries for instance, the incidences of diabetes mellitus increased from 4,000,000 cases in 1980s to 8,000,000 in 1990s. And Saudi Arabia seems to be suffering more seriously than other countries. It becomes the fourth highest country in the world in occurrence of diabetic mellitus disease according to Al-Rubeaan in (Al-Riyadh No.12263. 20/1, 2002:6) Moreover, WHO annual report 2001 provides another confirmation of this point. 'the scale of the problem that diabetes poses to the Eastern Mediterranean regional health is still widely under-recognized and presents a daunting public health challenge. Recent estimates predict that if current trends continue, the number of persons with diabetes will more than double, especially in less developed countries of the region. More efforts are needed, especially to accord high priority to diabetes control, provide adequate budgetary resources and conduct national community - based surveys' (WHO 2001:156) It is believed that progress and fast economic and social change that took place in the last three decades have contributed to prevalence of this illness. Moreover, information indicates that 'the diabetes type prevailing in Saudi Arabia is the non-insulin dependent diabetes type attacking in middle age. Most patients are already obese at the time of diagnosis' (Mott, 1992).

Tooth decay, dental and gum diseases are often significant, health problems for a large number of Saudi people, as table 1-7 for example, indicates. However, since these figures only show (MOH) health centres' patients, the numbers could be higher if governmental hospitals and private health sector's patients were included. A research study, which was conducted by the General Administration for health services in Girls' school in 1997 showed for example, that '87% in girls kindergarten suffer from tooth decay. 91% of elementary female students have tooth problems. While 98% of the elementary schools and 59% of kindergarten take sweets and

desserts between meals. Only 18% of students are used to brush their teeth' (1997:8). Also,

Gandeh and Millat found in their report about dental caries among school children in Jeddah that:

'83% rate of dental caries documented for primary-school children is high being an endemic problem of high prevalence among both sexes. Similar studies in Saudi Arabia have noted high rates of dental caries and other related tooth mortality in the range of 44% and 68% among both primary school children and the young population in general. Several underlying causes suspected is dietary patterns among school children, poor dental care practices and a services shortage to these groups among other factors documented in Saudi Arabia' (2000:399)

Dental caries is primarily a microbial disease, but dietary factors play an essential role in the initiation and progress of a lesion. Furthermore, the disease can be controlled and prevented by dietary means. Scheer argues that:

'the change in dietary habits has significantly affected the prevalence of dental caries. The consumption of fresh vegetables and fruits is relatively low, especially among school children. Sugar consumption almost doubled between 1974 and 1981 increased from 130,000 tons in 1974 to 320,000 tons in 1981, an increase of 146%. In addition to the increase in sugar consumption, there has been a change in food availability which has been associated with rising caries rates, particularly among children. The availability of soft drinks, sweets, confectionery and other high sugar foods has led to a considerable increase in the consumption of these foods in between meals' (1985: 20-2)

Also, Musaiger (1997) indicated 'dental decay in the Gulf region is estimated by 95% among children. School children are the most affected by dental decay due to intake of sweets such as chocolates, and other sweetened food items and soft drinks' (1997:167). Another study in girls' schools conducted in 1997 indicated that: '54.4% were suffering from malnutrition in elementary and junior high schools, and 40.6% students have malnutrition in high schools' (General Administration for Health Services 1998:8). A nutritional profile of 285 Saudi primary school girls aged 6-12 in Al-Khober in the Eastern province was conducted and haemoglobin values were taken. This study found that '26.4% of girls had haemoglobin below the standard. 22 girls had one or more parasitic infestations. Those with parasites had a significantly higher prevalence of anaemia (38.4%) than those without' (Al-Yousef, Al-Dabal, 1989:371-7). Moreover, a study of the health and nutritional status of 337 pre-school children aged 0-60 months in two villages in the Qassim region showed that: 'malnutrition was the main factor affecting health of the children' (Abdullah *et al.*, 1982:1-8). Another study by El-Hazmi *et al.*, confirms the findings above:

'Anaemia seems to be a common health problem in Saudi Arabia and is caused by a variety of nutritional environmental and genetic factors. Hypochromic, microcytic anaemia is by far the most common variety of anaemia throughout the world. In Saudi Arabia, however, the picture

is rather different. Several studies were carried out in the Kingdom, demonstrate that non-nutritional anaemia constitutes about one third of the total number of anaemia cases' (1981:20).

If one-third of anaemia cases in Saudi Arabia are due to non-nutritional causes, then it is quite evident that two-thirds of anaemia cases could be caused by nutritional deficiency. Also El-Hazmi and Warsy's (1999) study found that 'Anaemia is a frequent problem in Saudi children living in different parts of Saudi Arabia and emphasizes the need for nutritional and genetic assessment to determine the nutritional contributions to anaemias and hence the correction of nutritional anaemias by proper dietary intervention' (1999:221-5). WHO annual report 2001 provides another confirmation of this point 'Iron deficiency anaemia is a serious public health problem in all countries of the Eastern Mediterranean Region' (WHO 2001:89) Acuteness of the problematic condition of malnutrition appears to be very serious. Readdressing this kind of situation becomes a must. WHO proposed practical measures to handle this situation as follows: 'Control of malnutrition disorder in the Gulf Countries calls for a host of measures that cuts across all sectors, for example, nutrition education, creation of mass awareness through the media, control of food importation and pricing collaboration with the food industry, and health care support' (WHO 1990:25).

Another sign of a potential health problem in the Saudi society is the increase in obesity and therefore, many studies have been carried out to explore its incidence, causes and implications. Some of their conclusions are summarized below:

- Obesity rate is over 40% in different categories of the Saudi people including both males and females. (Ministry of Health 1994:4).
- 50% of the Saudi people suffers variably from obesity. (Bawazir 1997:2).
- Around two thirds of the Ministry of Health employees are facing the problem of excess weight as was found by Al-Jassir *et al's.*, study in (1998)

'prevalence of obesity among the Ministry of Health Employees in Riyadh indicated that around two thirds of the Ministry of Health employees are facing the problem of excess weight. This is, if not the highest, certainly one of the high prevalence rates of obesity. Obesity can thus be regarded as a major health problem among the Ministry of Health employees and is genuinely a cause for concern. It has also been shown that education and awareness play negligible or no role in the control of obesity' (1998:64)

- 66% of Saudi women and (52%) of all Saudis are suffering from obesity. (Asharq Al-Awsat, No. 8114. 14/2/2001:26).

Children represent a large percentage of the Saudi population and for this reason many special studies about their diet and dietary habits have been carried out. Three of these studies have been reported by Abahussain (2002) The first study was carried out by Al-Dhufairi in 1970 where he found that Saudi students and children were not suffering from obesity. But 26 years, later Al-Dhufairi found that 30% of Saudi students and children were suffering from obesity. A second study was conducted by Al-Nozha *et al.*, (1991). They discovered that 14.7% of their respondents were accustomed to eating snacks between meals. In addition to that, 17% of them used to go to a restaurant once or twice a week for some meals. Consequently 20% were suffering from obesity. A third study was carried out by Aba Al-Kael in (2000). This study came to this result that: 13.5% of Saudi students and children were suffering from obesity. (Abahussain Al-Riyadh No.12345. 12/4/2002:20) It is strongly believed that obesity is becoming one of the most important public health problems. El-Hazmi and Warsy's study (2000) suggested that 'Obesity can be regarded as a major health problem among the Saudi population. It has been implicated as a risk factor for the development of many diseases' (2000:280). Musaiger (1987) had pointed to this 20 years later. 'It is highly believed that obesity is becoming one of the most important public health problems in the Gulf. Although it is more prevalent among middle-aged adults, childhood obesity has been reported in many parts of the region' (1987:157) .

The above incidences of obesity might be considered as the tip of the iceberg of a medical phenomenon which ought to be taken very seriously, but to help see obesity as a medical problem, one needs to scrutinize its causes. Al-Othaimen (1998) holds the opinion for example, that 'the high consumption of rice, meat, fats and sweets, accompanied with excessive meals, lack of exercise, dependency on foreign labour in most household work, and lack of dietary awareness are the main factors responsible for obesity among Saudis.' (In Al-Riyadh, No.

11101, 15/11/1998:1). The increase in obesity can also be linked to the consumption of fast food meals that are rich in fats. The fast food trade has become a profitable business in the gulf region and its impact on dietary habits is complicated by wide spread illiteracy and poor dietary education, in addition to lack of dietary information. Lack of physical activity and exercise may also, be considered as a primary factor in obesity in Saudi society. Exercise helps the body burn excess calories thus aids in weight reduction. El-Hazmi and Warsy's study (2000) found that 'factors most closely associated with obesity include dietary habits, lifestyle, limited of physical activity, most house work is done by home help, out door activities are scarce and genetic susceptibility' (2000:280). Abahussain also asserted that 'staying long hours watching TV and playing computer games were important factors in increasing obesity. As far as infant obesity is concerned, Abahussain believes that some causes behind infants' obesity are excessive bottle feeding and the lack of awareness about the right amount, kind of milk and suitable supplementary food for babies, the lack of hygienic methods in preparing babies' bottles and food by some mothers or housemaids' (Abahussain in Al-Riyadh No. 12345. 12/4/2002:20).

Social factors also, play a part in increasing obesity in S.A. where it is common for food to be served when entertaining guests . Social and religious occasions, such as marriage ceremonies, *Ramadhan*, *Eid* holidays and other occasions are always associated with the high consumption of food. Generally people consume large quantities of fatty food and sweets during these occasions, especially during the month of *Ramadhan*, eventually leading to an increase of weight. Obesity is therefore, linked very clearly with lifestyle:

'there are several factors contributing to the incidence of obesity in the Gulf. With the greater availability of housemaids, cars, televisions and other sophisticated household appliances, the physical activity of the people has significantly diminished. Among women the problem is more serious, as watching television and eating snacks are the main activities during their leisure time, especially when the majority of the women are unemployed' (Musaiger 1987:158-9).

The WHO annual report 2001 conforms this point of view:

'the problem of affluence and an increasingly sedentary lifestyle in the Gulf countries has resulted in an epidemic of obesity, with corresponding increases in noncommunicable diseases. Findings from surveys carried out in the Gulf Cooperation Council countries indicated that cardiovascular disease is the biggest killer, followed by neoplasm' (WHO, 2001:88) . As Lupton concludes:

'it was contended that lifestyles are different now, people still eat a lot, but they do not burn it up because of their sedentary occupations. Now, there is much more variety of foodstuff available, but also more concern and anxiety around food which are often related to the sheer diversity of food available and the extent to which it is processed' (1996:85)

Also, Al-Khalifa (1998) contends that the economic and social change experienced by the Saudi society has helped in changing the lifestyle and dietary conduct of most individuals. There is a general tendency to eat more meats and fats instead of beans and vegetables that can provide daily needs of carbohydrate and protein, with less fat. Also, high consumption of non-nutrients foodstuff such as soft drinks, candies, cakes ...etc., has increased the ratio of cardiac, diabetes and obesity diseases. (World of Dietetics, issue no. 1, 1998:14). This view is shared by Bawazir, who stated that:

'the dietary conduct of a certain individual reflects his health and his capability to work and the degree of his activity. Improper dietary patterns may lead to overweight or underweight problems. Improper dietary practices are considered as one of the most factors leading to obesity. Greediness is thought to be acquired conduct with some individuals as well as the welfare life style enjoyed by the community in addition to lack of exercises. It must be noted that obesity does not depend on the quantity of the food intake, but the volume of the calorie intake. For instance, foods with high calories such as burgers, fried chips, and nuts are primary sources of many diseases including obesity. Meanwhile over intake of vegetables and fruits is not harmful as they contain less calories and high vitamins and fiber. For this reason, the standard meal must be balanced in terms of lesser calories, fats and carbohydrates, and high fibre and vitamins. (1997:2).

There appears to be therefore, a relationship between obesity and change in dietary habits. As Astrup indicates 'the epidemic of obesity causes important public health problems due to the serious impact of obesity on diabetes, cardiovascular disease and cancer. The cost of obesity-related complications has been estimated to 5-10% of all health costs' (1998:31). Also, Musaiger (1997) said that :

'obesity is responsible for the causation of many health problems such as cardiac, and arterial sclerosis, hypertension, diabetes mellitus, some types of cancer, indigestion problems, short of breath, arthritis and other diseases. In the gulf countries there is an increase of obesity especially among females where the rate is 50-70%, while in the males, the rate is 25-45%. These percentages are higher than those reported in many developed countries' (1997:12) .

Moreover, the Royal College of Physicians (1983) mentioned that 'in young adults, weight greater than ideal weight for height is clearly associated with increased mortality and morbidity' This unhealthy condition and situation is becoming more alarming in the Gulf countries

especially among adults' (1983:16) The researcher shares what Lupton had concluded as she had put it:

'Food is now commonly represented as a pathogen, a source of disease and ill-health. Not only are some foods categorized as unhealthy they are understood as harbouring such health-threatening substances as cholesterol, fats, salt, additives and preservatives, inciting allergic reactions and as contaminating in terms of breeding bacteria with the potential to cause food poisoning' (Lupton 1996:77)

But Annals of Saudi Medicine offered another look and suggestion to improve this health situation:

'the high prevalence of obesity and the lack of awareness among those afflicted emphasize the need, for community-based programmes for preventing and reducing obesity, since weight control is effective in ameliorating most of the disorders associated with obesity, such as diabetes mellitus, hypertension, stroke, heart disease' (Ann Saudi Med 1996:269-73)

Also, Sawaya *et al.*, indicated that 'many Saudi dishes contained a high amount of saturated fatty acids and cholesterol. Additionally, there is sufficient evidence that fibre intake is low, as a high fibre diet is so bulky and low in energy and this might be useful for the control of obesity. Moreover, Sodium intake is very high leading to a risk of hypertension' (1984:10).

A study carried out by Al-Jassir, El-Bashir and Kanawati (1998) looked at ingredients used in preparation and cooking of food in normal Saudi households. The Saudi dishes prepared were: *Kabsah*, *mataziz* (flour, meat, vegetables, tomato, sauce, salt and onion), *Harisah* (wheat, meat, salt and onion) *Gursan*, *Saleeg*, *Jareesh*, *Muadoas* (onions, salt, rice and lentils) *Mufallaq*, *Bukhari* rice, *Marrak* (vegetables, onion, meat, salt and tomato sauce), *Henainy*, *Qishta* (dates, goat's or cow's butter and flour) and *Muhala* (dates, goat's or cow's butter and flour). The chemical composition of these dishes showed that:

'*Qishta* was the most rich in energy (343.6 Kcal/100 grams) while *harisah* is lowest (67.7 Kcal/100 gram) as shown in the table. The results indicated that the national Saudi dishes contain fewer calories and less fat compared to dishes from fast food which suggests that changes in eating pattern may contribute to the increase in dietary malnutrition in Saudi society' (Al-Jassir *et al.*, 1998 :64) .

A - Table 1-8 The chemical composition of some traditional dishes in the central region of Saudi Arabia in each 100 gram.

Type of Food	Fat Gram	Protein Gram	Carbohydrate Gram	Calories K Cal	Fibre Gram
Saleeg's meat	16.21	26.85	1.00	266.3	.4
Qishta	4.78	2.68	72.47	343.6	2.24
Rice and meat	4.47	7.4	18.92	144	.17
Gursan	4.55	5.98	9.28	102	.51
Kabsah rice only	4.9	3.44	24.42	148.2	.12
Henainy	3.67	5.19	59.1	289.8	1.59
Jareesh with buttermilk	2.95	2.35	11.99	83.9	.27
Mataziz with meat	2.91	8.2	13.39	111.8	.49
Al-Mataziz without meat	1.75	3.93	16.34	96.8	.57
Saleeg without meat	1.59	1.76	12.86	72.8	.5
Muhala	1.42	4.9	69.16	305.8	1.91

(1998:147)

B - The chemical composition of some traditional dishes in west and east regions of Saudi Arabia in each 100 gram.

Type of Food	Fat Gram	Protein Gram	Carbohydrate Gram	Calories K Cal	Fiber Gram
Bukhari rice	4.09	3.44	24.42	148.2	.12
Whole dish	4.47	7.4	18.92	144	.17
Muarrk meat	3.38	10.89	16.75	141	.21
Muadoas (Rice + Lentils)	3.2	4.21	14.69	102.8	.65
Harisah	1.76	3.30	9.66	67.7	.28

(1998:148)

Conclusion:

Some light has been shed on aspects of social change in Saudi society and more specifically on the increase in diseases related to diet and dietary habits. It has been argued that the increase in diseases, such as diabetes mellitus, anaemia, hypertension, heart diseases and tooth decay is conspicuous and may be seen as a consequence of social and economic change in Saudi society, in general and changes in its lifestyle and eating habits in

particular. This situational fact is corroborated by a community medicine survey carried out by Al-Shammari *et al.*, (1996) in Riyadh as follows:

'obesity was found in 24.5% of those who were suffering from chronic diseases. Diabetes and Cardio-vascular diseases were found with 36% and 22% consecutively. The morbidity rate of these diseases is similar to those rates found in advanced rich countries. Therefore, there is an urgent need to concentrate on obesity, life style and diet that would help in reducing weight in order to positively affect diabetes, hypertension and cardiac diseases' (1996).

Also this theme is shared by WHO (1990) EMRO technical report No. 17, as it has been stressed and stated as follows : ' Saudi Arabia is one of upper income groups countries affected by malnutrition of excess and imbalance producing obesity, hypertension, cardiovascular accidents, diabetes, dental caries and possibly some types of cancer' (1990:14). This kind of problem of Saudi nutritional context can be found in the Gulf countries as it has been asserted by Musaiger 1987:

'Coronary Heart Diseases (CHD) are one of the major causes of mortality among adults 40 years and above in the Gulf. Affluence, changes in food habits, the prevalence of hypertension, overweight and diabetes, as well as the stress of modern life seem to be largely responsible for the increasing morbidity and mortality due to these diseases in the region. Among all these factors, diet is of key importance in the etiology of (CHD). The transition to a more Westernized diet is likely to result in a high intake of animal fat and hence saturated fatty acids and dietary, cholesterol. The intake of food rich in cholesterol such as eggs, red meats and chicken, has increased remarkably in Gulf countries' (1987:161).

But in a broader scope the above nutritional condition similarly appears in the Arab countries as Mussaiger and Samir (1998) stated clearly that :

'the Arab countries face several nutritional problems, growth retardation in infants and young children, micronutrient deficiencies and diet-related chronic diseases. The prevalence of these problems varies from country to country , due to differences in socio-economic status, health facilities and food availability. Although some of the Arab countries have formulated a National Nutrition Plan of Action to overcome the nutritional problems, none of these countries have put this plan in implementation. The need for practical and effective programmes to prevent and control nutritional problems in the Arab countries are highly recommended .These programmes should be carried out in cooperation and coordination with several governmental, private and industrial sectors' (1998:86).

These health problems which could be the by product of changes in people's way of life and their dietary habits. They can be ameliorated by readdressing and improving health policy in general and nutritional awareness programmes in particular which become an immediate necessity. From this study exposure of the Saudi social, economic and nutritional background, it is more appropriate to investigate some factors, which might be responsible in determining

people's food choice and dietary habits in a general context. The following Chapter will explore this point.

Chapter Two

FACTORS INFLUENCING FOOD CHOICE AND DIETARY HABITS

Introduction:

Health and well-being are affected by the social milieu within which people live and people's food choices are an important part of this milieu. As has been remarked the food choices of individuals signify to themselves and to others aspects of the social context such as gender, ethnicity, position in the life-cycle and their economic and cultural position. Howarth for example, agrees that 'Food choice is a complex and multi-determined process influenced by culture and tradition, environment, social relationship, gender, health income and stage in the life course' (Howarth 1993: 65). Dietary habits and practices in any society are not shaped in one day or in one generation, but are cumulatively formed through the historical evolution, social and economic development of that society. In investigating diet and dietary habits one has to bear in mind therefore, that there are many factors which are directly, or indirectly, responsible in determining changes in peoples' dietary practices particularly in the context of social change. The importance of examining food choice as the context of social change has only quite recently, emerged as a topic of serious intellectual interest. As Mennel *et al.*, (1992) note:

'the subject of food and eating habits is emerging as a more substantial area of research in sociology today. Such trends often have multiple causes. One influence may be the increasing awareness of nutritional problems both in the underdeveloped countries and in the developed countries. Malnutrition is rampant in the third world countries while in the industrial societies the incidence of eating disorders including anorexia, nervosa, bulimia and obesity is attracting more and more attention. A second influence may be the awareness of nutrition and dietetics, and the increasing concern with preventative medicine, which has involved sociologists teaching health-related courses to students training in these fields' (1992:1-5)

This chapter, considers therefore, some of the factors which contribute to the shaping, of dietary habits and food choices in any society before considering in more detail, the particular context of Saudi Arabia.

Diet and Culture:

Tylor defined culture as follows: 'Culture is that complex whole which includes knowledge, belief, art, morals, law, customs and any other capabilities and habits acquired by man as a member of society' (1871:6). This definition is one of the earliest and one which many sociologists and anthropologists still use in their studies. But an up to date definition might be worth putting forward in order to see how culture is an important factor in society. 'Culture is a

collective noun for the symbolic and learned aspects of human society, including language, customs and convention, by which human behaviour can be distinguished from that of other primates' (The Penguin Dictionary of Sociology 1983: 59). These definitions are useful in their demonstration of the power which culture has in any society with respect to diet and dietary habits. Culture can be seen as the main determinant of what people eat, for food has always been much more than a fountain of body nourishment. It has played a key part in social life, as

Fieldhouse notes:

'In order to investigate socio-cultural aspects of food habits, three different parameters have to be applied. First of all come techniques of food production, storage, distribution, processing and meal preparation. Second, there is the actual food consumption including such variable as seasonal fluctuation and status of family members. Finally, attention must be paid to food ideology how people think about food and its particular meanings and value' (Fieldhouse 1986:31).

As he continues dietary habits and food choices have to be seen and understood within a socio-cultural dimension:

'the inter-relationship of dietary habits with other elements of cultural behaviour and with environmental forces emphasizes the futility of treating food choices as being intellectual decisions made on rational nutritional grounds alone. Attempts to change dietary habits in order to improve nutritional status may be thwarted by failure to understand cultural requirements. Where dietary changes are introduced there is the probability that other aspects of social life will also be affected. A corollary to this is that changes in dietary behaviour may be brought about, not by direct modification of food habits, but by alteration or manipulation of the material or non-material culture' (1986:35).

It was Levi-Strauss (1990) who indicated the powerful relationship between culture and diet arguing that food practices could be treated as a language and identifying the primary binary opposition, common to all cultures, between nature and culture. He suggested that 'cooked food is a cultural transformation of the raw, in which nature is transformed and delimited. The ways in which this transformation is carried out as part of every day life serves to define culture' (1990). In this sense culture plays a crucial role in the determination of people's tastes and preferences and food preferences can not be seen outside of the social context. Lupton stressed this point as follows:

'how are human food preferences and habits generated, reproduced and diffused throughout a society? How do they change? How do we account for major differences between human cultures in their food practices and preferences? What is the interaction between tastes in food and cultural shifts in eating? How do such tastes become internalized and inscribed upon the body? What role do structural features of society such as gender and socio-economic privilege and power relations play in shaping food habits and preferences? What are the symbolic meanings of food and how do they develop? It is

these questions that anthropologists, sociologists and historians of food practices have explored, adopting a variety of approaches' (Lupton 1996:8)

In addition to the shaping of food and preference Douglas indicated the role of food in ritual activities and social interaction. She argues that 'food categories constitute a social boundary system, the predictable structure of each meal creates order out of potential disorder. The meal is thus a microcosm of wider social structures and boundary definitions. The ordered system which is a meal represents all the ordered systems associated with it' (Douglas 1975:273). Food conveys social meanings and as Douglas notes these are often realized in the common daily practices within the family circle. For Lupton, such meanings are experiential as well as cognitive:

'that individuals come to understand themselves, their bodies and their relationship to food and eating. Touch, taste, smell, hearing and sight are our entrees into culture. Food, of course, has a supremely physical presence, and we interact with this presence through our senses: We smell, taste, see and touch food, and sometimes hear it (for example, the sizzling of frying food). We do not necessarily need language and discourse to experience food. However, language and discourse are integral to the meanings we construct around food- how we interpret and convey to others our sensual experiences in preparing, touching and eating food- which in turn shape our sensual responses' (1996:13).

As she goes on to say 'Food habits and preferences are central practices of the self, directed at self-care via the continuing nourishment of the body with foods that are culturally deemed appropriate constituting a sources of pleasure and acting symbolically as commodities to present a person to oneself and others' (1996:16). The value system of a culture also, shapes the way in which foods are used. As Sanjur suggests 'whilst it is easily seen that the direct consequences of food intake are biological food meets the energy and nutrient needs of the body it is also apparent that the nature of that food intake is shaped by social, religious, economic and political processes' (1982: 18). In this sense as Fieldhouse argues. 'Nutrition is a bicultural issue par excellence. Dietary habits, a term which includes food choice, methods of eating, preparation, number of meals per day, time of eating and the quantity consumed are an integrated part of a coherent cultural pattern in which each custom and practice has a part to play' (1986:1). This means, as Williams suggests that 'Food for one culture may be unacceptable for another. Items considered to be food for one culture may be regarded with disgust by another' (Williams 1973:134). Pork, for example, which is a favoured meat by many people, is not eaten by Muslims

or orthodox Jews. Milk is a staple food for many people, but it is rejected by other cultures as an animal mucous discharge. Rice is the staple food in Southern Asia, maize among the Indians of North America, the potato for the Incas and the Polynesians, suffering from a dearth of mammals, eat dogs and find them highly palatable' (Queen 1979:52). Moreover, 'many diet conscious Americans reject bread, but in a Greek home bread is the main food. It is the meal, and all other foods are considered accompaniments to the bread and are eaten between bites of bread' (Williams 1973:143). 'In most Asian countries rice is eaten at two or sometimes three meals per day' (Carlson *et al.*, 1982: 107 - 15) while in Saudi Arabia it is Arabian coffee and dates which traditionally made up the early morning breakfast for most Saudis. .

Besides these patterns there are culturally specific foods for special occasions, for example, turkey is usually served at an American Thanksgiving dinner, and fish for Good Friday during Lent. As Lupton explains 'the food served on special occasions and feast days is usually ritualized either within the context of the family, or more broadly in the wider culture. In Western societies celebrations such as, Christmas, Easter and birthdays and their accompanying ritualized foods serve to produce and constitute ideals of the happy united family' (1996;63).

For Muslims, special foods are served during *Ramadan*. This involves a whole month of fasting during the day and eating two big meals at night during this religious occasion. Highly sweetened desserts, fried samboosa (ground meat with onion and spices in pastry) and sweet drinks are served. In Saudi society, as elsewhere, cultural customs and traditions therefore, have an effect on what people eat, with each region having its own traditional foods as well as styles of preparation and consumption. Food choice therefore, distinguishes one society from another but there are also cultural differences in dietary practices so that, at a given time of day, the foods eaten may be different. As Caplan notes 'the study of food reveals our social and cultural selves, as well as our individual subjectivities' (1997:1). It is conceivable that the power which culture exerts over food choice and dietary habits is overwhelming. She goes on to say that 'food is never "Just food" and its significance can never be purely nutritional. Furthermore, it is intimately bound up with social relations, including those of power, of inclusion and exclusion, as

well as with cultural ideas about classification 'including food and non-food the edible and the inedible', the human body and the meaning of health' (1997:3). Culture can be viewed as an important factor to the goals of nutrition since peoples' food practices are more complex than a simple nutritional or biological perspective would allow.

Ethnicity:

Ethnicity is an essential part of social reality, which may be visible in the underdeveloped countries and in developed countries. Dentler defined ethnicity as follows:

'Ethnicity refers to a social characteristic of population. Its root, ethnic, means nation and writers originally employed the term to describe behaviour and attitudes associated with country of origin. Today, however, an ethnic group includes persons who, by virtue of commonly perceived physical and cultural traits, are self-conscious of special group membership and subject to differential treatment by persons outside the group.' (1967:163).

The second definition seems more up to date and precise presenting a tighter sociological definition which the concise Oxford Dictionary of Sociology offers 'Ethnicity defines individuals who consider themselves, or are considered by others to share common characteristics which differentiate them from the other collectivities in a society, within which they develop distinct cultural behaviour' (1994:157) and suggests therefore, that each culture tends to think of its own rules and practices as being normal, with any difference from these general practices and rules may ridiculed or dismissed in relation to food. For example, people, when they travel abroad, may experience many difficulties in adjusting to new eating habits, as do immigrants in their newly adopted countries. The food on offer may be substantially different from their normal food, whilst the manner of eating may prove to be elusive and challenging. Bradby in his study of Punjabi in Glasgow gave a clear example of the importance of ethnicity to food practices: 'Young women of Punjabi origin in Glasgow categorise food into 'your foods' and 'our foods' and they eat both, although the evening meal is more likely to consist of foods of the latter category' (cited in Caplan 1997:13). Moreover, Fishlock is of the opinion, that the migrants' role is clearly evident in influencing British cuisine. As he puts it 'Chinese and others entering the take-away food industry have significantly modified the range of foods available and facilitated the transformation of British tastes, for example, curry is now considered almost as British as roast

beef' (cited in Harbottle 1997:89). Evidence of foreign influences on British cuisine can be, for example, found in Delia Smith's recipes, which are:

'liberally sprinkled with ingredients and recipes foreign to traditional English cookery : red peppers (Italy), Halloumi Cheese (Greece), Fontina Cheese (Italy) , Taboulah Salad (Middle East), Futtoush Salad (Middle East), Buffalo Mozzarella Cheese (Italy), Lemon Grass (Thailand), Californian grilled fish (America) , Chorizo Sausage (Spain); and Srilankan curry (Sri Lanka)' (cited in James 1997:78)

Furthermore, the cuisine of a society is held to reflect its predominant ethnic characteristics. Thus, Italian foods are earthy, English foods are robust, Japanese foods are aesthetically presented. (Martin-Ibanez, cited in Lowenberg *et al.*, 1979:120). In addition to that, food and cuisine help stereotype nationals, so that French are 'Frogs', the Germans are 'Krauts', the Italians are 'Spaghetti eaters' and the British, 'Limeys' (deGariné 1976:41).

Religion:

Food choices are often restricted by what is acceptable under the tenets of the consumer's religion. Fieldhouse emphasized this point "Religious dietary restrictions are one way in which adherents to the faith are reminded that they are indeed different to other groups' (1986:157). Religion is one of the most important social institutions which plays a dominant role in shaping and determining the lifestyle in general and food choices and dietary habits in particular in many societies. Many factors, which form food choice and dietary habits, are derived from religious teachings. No one can ignore the importance of religion to the human race in the past, as well as in the present. The perfect proof of this fact is what Lowenberg *et al.*, asserted, that, 'about 60% of world population are adherents somehow to the five major religions: Christianity, Islam, Hinduism, Buddhism and Judaism' (Lowenberg *et al.*, 1979). Each religion embraces several sub-groups, which in turn have their own particular beliefs, patterns of living, and diet for their followers. For religion infiltrates deeply into many people's food practices. Eckstein mentioned that 'Food can serve three purposes in a religion: to communicate with God; through the saying of a Grace, to demonstrate faith through acceptance of divine directives concerning diet to develop discipline through fasting' (1980). Lowenberg *et al.*, emphasized the same point. 'Dietary strictness may include (a) What food can and cannot be eaten, (b) What to eat on certain days of

the year (c) Time of day to take food (d) How to prepare food (e) When and how long to fast' (*Ibid*:111). Religious teachings on people's diet is shown quite plainly by Fieldhouse 'dietary regulations are obeyed because they are written down in Holy Books. Their origin must be looked for in particular environmental and cultural conditions. Many of the food prohibitions of the various religions involve meat' (1986:133). Simoons similarly notes 'the widespread rejection of the pig as food noting that the Middle East is a centre of pork avoidance, where Christians and pagans, as well as Moslems and Jews, all reject pork as food' (1961). An explanation of how a religion's rules with regard to food may protect its followers' health is given by Simoons 'It is also possible that certain prohibitions developed as a protective device against some apparent hazard. This latter explanation is commonly offered in respect to the Jewish prohibition on eating pork. Pork is readily infected with parasitic worm, *Trichinella Spirella*, and therefore can be a source of disease and sickness' (OP. Cit:39).

Islam the religion of SA. is the second largest major religion in the world with around 1000 million Muslims. It is not only a religion, but also, a way of life. Islamic teachings are interconnected with all activities related to social, economic, political systems, diet and dietary habits. Therefore, it could be anticipated that Islam has made an important contribution in health and dietary promotion. Islam calls for cleanliness of hands, place, food and drink and puts strict rules on food and drink to create a healthy society. It allows only good and pure healthy things to be taken as food and drink. (See Appendix B) And has had a great affect on people's food choice and dietary habits. So strict that from the sociological point of view these rules may be considered as taboos.

Taboos:

Taboos often linked with religion and belief systems, play a decisive role in shaping and regulating people's food choice and dietary habits and is therefore, of importance in determining people's nutrition. Macmillan's Encyclopedia of sociology offers a general look at taboo as follows:

'the term has been extended from its original context to apply to a complex of institutions and practices in many different cultures in which avoidance is enjoined- objects that may not be touched, comestibles that may not be eaten, places that may not be entered, words that may not be spoken, things that may not be seen or done because of the danger or pollution which may results from contact. (1983:391-92)

A taboo is a kind of sacred law, which reinforces secular law in maintaining social control. Ogbeide gives an example: 'In mid-west Nigeria the animal protein intake of children and pregnant women was directly and adversely influenced by food taboos and avoidance.' (1974:213-16). Another is given by Wilson 'Malay women lying in for 40 days after delivery and avoiding cold fruit, vegetables, and toxic fish' (1973:267-74) . Also, Fieldhouse gave another example of taboos: 'the case of the sacred cow of Hinduism is illustrative of a complex interaction of religious and philosophical belief with environmental pressure giving rise to a prohibition which elevates the tabooed animal to a symbol of an entire way of life' (1986:175). Lodrick used the Indian taboo case to demonstrate how strongly a taboo may jeopardize people's life in general and their diet in particular. 'the case of India's sacred cow provokes an intense debate between interventionists and laissez-faire nutritionists. India has an estimated 180 million cattle' (1981:175) 'the slaughter of these beasts for human food is generally forbidden. Whilst people starve to death cattle wander freely about the streets untouched, and yet in'1966, 120,000 people demonstrated in front of Indian Houses of Parliament in support of the All Party Cow Protection Campaign Committe' (Fieldhouse 1986:175). As, Simoons states that 'the sacred cow concept of Hindu India has many interesting and important socio-cultural and ecological manifestations. It is not the economic utility of cattle in Indian life, but also it is religious belief as a force that in some respects has a detrimental impact on the ecology of food and nutrition' (cited in Robson (ed.) 1980:119).

Cohen reached a conclusion about the role of taboos in determining and shaping people's dietary habits and practices. 'there is no society where people are permitted to eat everything, everywhere, with everyone, and in all situations' (cited in Fieldhouse 1986:191). As Fiedhouse concludes. 'we can acknowledge that even seemingly irrational practices are cultural products, and that dietary change is inseparable from cultural change' (*Ibid*:192). It is no wonder that strict

islamic rules and regulations are purposefully directly or indirectly affecting the well being of mankind. And this intention can not be different from that of the taboo's. Also, it has to be borne in mind that family plays a significant role as a medium of conveying social and religious rules in general and dietary habits in particular.

Family:

The family has great effect on the food choices and dietary habits of its members, through passing on customs, traditions, and values of society during childhood as part of the socialization process, as Fieldhouse notes:

'in addition to importing food values, the socialisation process teaches the social, cultural and psychological meanings and uses of food. Dietary habits are acquired in early life and once established are likely to be long-lasting and resistant to change. Hence the importance of developing sound nutritional practices in childhood. Socialization describes the process by which culturally valued norms of behaviour are passed on from generation to generation. It is a life-long process. Natural functions, such as eating, become socialized as the growing child is conditioned by customs and traditions'. (1986:4).

Lupton similarly elaborated this process more clearly: 'Rules around food within the family context mark the boundary between acceptable and non-acceptable behaviour. Parents' attempts to shape their children's food consumption habits, including table manners, may also be regarded in the wider context of the acculturation of the young into the adult world, in which the rules of civilized' behaviour are established and maintained. The child learns what food is considered appropriate to eat and what is not and how to eat it as part of his or her entry into the social world' (1996:52)

Therefore, children's principal source of information about diet and the foods they eat are their parents, and in particular their mothers. And as a result, many people's daily decisions become routine, a matter of habit which they follow without conscious determination. Fieldhouse also, exposed the relationship between home and school in many societies as regards influences on children's food and dietary habits and argues that 'as the child grows older, the circle of influence increases with exposure to diverse experiences and viewpoints. Socialising agencies may complement or conflict with each other. For example, food habits which have been informally learnt at home are reinforced or contradicted in the more formal setting of the school' (1986:6). For example, one of the specific ways in which children learn about approved and suitable food is through a system of compensation and retribution, which may be explicit or implicit, and which is often accompanied by other reinforcing messages. In the USA for example, a chocolate

rewards a good-mannered child, while an ill-mannered child is deprived of the same as Mead emphasized:

'each generation of children is taught that bad food habits are a possibility against which they must continually be on guard. That is, traditionally, we have tried to make the correct consumption of food an act of repetitive personal choice instead of semi-automatic behaviour. In many homes the right food and the wrong food are both placed on the table; the child is rewarded for eating the right food and so taught that the right food is undesirable because from the child's point of view, rewards are never given for doing things which in themselves are pleasurable or enjoyable. At the same time children are punished by having the wrong food taken away from them. The lesson is taught to the child that food which is delicious is an indulgence for which one is punished or with which one is rewarded'. (1980:3)

Meanwhile dietary habits and practices are mainly formed through all life stages of individual as Lupton stressed this deduction: 'pleasure and comfort linked with close family ties and traditions. When children become adults and leave home, they are free to experiment to rebel. They can then make their own choices about food, buy the sort of food they prefer, indulge themselves. But the pattern of dietary preferences and habits laid down in childhood never completely disappears; it is always reacted to consciously or otherwise' (1996:67)

In this way women can be regarded as the guardians of family health, and since the moment that they have their first child, in most countries they are largely responsible for infant health and development. Fathauer indicated, that 'Primary socialization occurs mainly through the agency of the immediate family. Food is one of the basic mediums through which adult attitudes and sentiments are communicated to the child, indeed the mother receives her definition for the child in association with feeding experiences' (1960:335-8). For example, in preparing meals for the children, U.S.A. mothers tend to select food they will eat, often from the family limited conception of children's food such as burgers, fish and chips, fish fingers and pizza. Also, particular food preferences of fathers and children play a major role in shaping a family's diet. In general, women cook meals that their families like. Food is symbolic of motherliness, of nurturing starting from the crib and thus a mother's self-esteem is deeply involved in feeding her family. Depending on her education she decides who has the authority to advise her about child feeding. If she is relatively unsophisticated or has little education, she is likely to view her own mother and her neighbours as her best guides. If she is somewhat educated, she may accept more readily advertising of business concerns as the greatest authority. Eating is usually a family affair. Another feature of the cultural impact in determining, what role a woman has to play in her household is well exposed and illustrated by Devault (1991) as follows 'some women do virtually

all the work of feeding their families, while others share this responsibility more with partners' (1991:117) Moreover, she went further in justifying and explaining the social background which in due course facilitates the women's role and role expectation as she suggests: 'for most girls, learning about house work begins early. And one of the lessons that most women learn is that house work is "womanly" activity' (Devault 1991:106). Food habits that are most closely associated with family sentiments are the most tenacious throughout life. Williams for example, suggests that:

children learn more about their roles as family members during meals and the role of each family member is most clearly illustrated to the child as the family eats together. Certain meals have more family significance than others have. 'Dinner in Western culture and lunch in the Eastern Mediterranean is more family centered than other meals and its pattern tends to be more complex. Its foods are often more symbolic. Strong religious factors associated with food also tend to have their origin and reinforcement within the family meal circle'. (Williams 1978:129-30).

The role of the family in providing suitable food experiences and shaping food choice is therefore, supreme. Doubtless to say that family is the most close and immediate social milieu where the individual learns and accumulates his/her social roles and behavioural expectations. In fact, it is through family where the individual could acquire most processes of learning and behaviour. Social learning theory in this context might be worth having in mind to explain the role of family in shaping and changing its members sound healthy behaviours. This theory has been put forward by Teresa Calderon as follows : 'behavioural change is mediated through cognitive processes and other personal factors and is influenced by environmental events and the perceived capability and skills to perform the behaviour. It requires positive reinforcement' (2001:142). This appears particularly true when it comes to the subject of health, dietary habits and practices of the individual within his immediate family. He/she acculturates his/her ways of life from early childhood through their immediate social milieu and the family in particular.

Social Relationships:

People tend to accept food readily from persons who are considered as friends or allies and thus medical and food advice is often more acceptable from people of authority and with whom a person feels a warm relationship. Food can, therefore, play an important central role in

solidifying social relationships within the society at large and within the family in particular. In Saudi Arabia for example, people usually have a big party dinner for their close relatives or friends as soon as they return from a long absence, and the offering of food is a symbolic gesture of social solidarity, friendship and social appreciation of others in many different societies. State dinners, friends' dinners, social festivals all follow this social precept of food as a universal means of expressing sociability and hospitality. Closeness of social relationships between people are signified and strengthened by the types of foods and meals they share together. For example, as Douglas argues, close friends are invited for a dinner party where they share a full meal, and this occasion might demonstrate how close friends are by the various kinds of food served on this occasion. Douglas comments that:

'the act of eating together indicates some degree of comparability or acceptance. Food is offered as a gesture of friendship, offering to share food is to offer to share a bit of oneself, to refuse food when offered is easily seen as a rejection of friendship. To accept an invitation to a social function and then to refuse the food is viewed as being unacceptable behaviour' (1972:61-81).

For many teenagers and adolescents just as important as the way they dress is the food they eat. This stresses their youthfulness and culture and conforms carefully to the expectations of their peer groups. In the U.S.A., where everyone else is drinking soft drinks and eating burgers or pizza, it is a strong-minded teenager who chooses milk and salad. Sahuchat illustrated vividly the social meaning of food as follows:

'eating is a social experience whilst nutrition is a health phenomenon. Junk food is eaten in the context of a social experience which includes music, noise and company, whilst in the structured meal, where these elements are missing the teenager feels that the social experience has been denied. In North America, nutritionists are often alarmed at a diet which seems to be based on burgers, pizza, French fries and soft drinks. However, these items are often consumed in addition to regular meals and provide the extra calories needed by growing adolescents' (1973:116-18)

Friends and relatives are therefore, of great importance in influencing food choice and dietary habits. Thus if they are hygienic and nutrition conscious, they may have a positive effect on friends and peers, and guide them towards adopting correct dietary habits and making good food choices. But if they are careless and unconcerned about their dietary habits and food choices, they may have a negative influence. Eckstein stressed the influence of peer group food choices among the group:

'Peer pressure is often associated with children and adolescents, though, it can be noticed within the context of any social grouping. In addition, food choice in specific instances is governed by social niceties which may limit individual freedom to choose. For example, in a restaurant setting, once one person has chosen a soup and salad combination it is highly unlikely that others in the party will choose full three course meals' (1965:95)

It appears, that peer groups do play an important role in harmonizing the social relationship within the society in general and in making food choice within the peer groups in particular.

Besides that, age is an important factor which is of a valuable consideration in helping to understand people's food choice and dietary habits.

Age:

Many beliefs, habits and practices about food are culturally passed from generation to generation. Food beliefs and behaviours are absorbed from early childhood, and are closely tied to the family unit and sub-cultures. In childhood and adulthood, food is inextricably inter-linked with group membership as well as kinship. Thorogood confirms this point 'age groups such as middle-aged men, fertile women, children or youth each group does have socially specific characteristics which are related to their experience of diet and health and their diet and health behaviour' (1992:54). Age is an important factor which has a great effect on food choice and dietary habits. Murcott elaborated this as follows: 'infants and the elderly occupy similar social locations both to one another and to the sick and mentally retarded. Food consumption practices and beliefs provide one arena in which this cultural location can be made apparent' (1992: 57), Beardsworth and Keil, for example, noticed that:

'babies and young children demonstrate an avid taste for sweetness, which seems to be largely independent of the degree of early exposure to sweet tastes. However, the nature of dietary exposure to sweet tastes that the child experiences does appear to shape the expectations and the degree of acceptability of particular sweet foods. Strikingly, however, the taste for sweetness appears to decline with maturity, with adults judging lower levels of sweetness to be most pleasant as compared with the levels preferred by children'. (1997:243)

Also Keane indicated that:

'the necessity to obtain new information about food and health was seen as time-specific and was related to particular stages in the life-cycle. Typical times for women were during pregnancy or when bringing up young children, while men became more interested in healthy eating information in their 40s and 50s, when they had reached a publicly recognized 'at risk' age for a heart attack. Young men in their 20s often expressed a blasé attitude to future health problems, while participants in their 60s and older felt there was little to be gained by changing their diet, unless they had a specific health problem' (Keane 1997:180).

As children grow, their food intake continues to be closely monitored by their mothers to ensure good health and opportunity for bodily growth and development. When the infant is weaned, it is expected that special care must then be taken to ensure that the baby receives the appropriate daily requirement of nutrients. Also, the infant's food must be well-mashed, bland and prepared to ensure hygienic standards are kept to protect the delicate body of the infant from contact with germs. Feeding of infants and children is generally considered an issue of nutrition, healthy development and immunity to disease.

Adolescence is a rather different matter. Good nutrition in early life is held to lead to a safe and healthy adulthood, as Demause emphasizes:

'In food consumption as in anything else, it is widely assumed that habits, behaviour and preferences, acquired in childhood shape those of adulthood creating patterns that are resistant to change. Socio-medical surveillance of children and their caretakers inevitably includes concern with the manner in which they are fed - a concern so self-evidently worthy that moralizing does not always need to be concealed. The history of infant feeding is replete with examples' (1974:34).

Growing independence, along with increased participation in social life and the generally busy schedules of adolescents may influence the eating habits of adolescents. They may often eat away from the home and are beginning to buy and prepare more food for themselves. In fact, some advertising for prepared foods to be cooked at home is being targeted to teenagers. Meal patterns of adolescents are often chaotic. Teenagers miss more meals at home as they get older, often skipping breakfast as shown in a study of female students in King Saud University (1993) later in this chapter. Females tend to miss more meals than males.

Many elderly people, moreover, tend to neglect the importance of a balanced diet, particularly if they are living on their own. It is the widowed and divorced people who might neglect their diet and may suffer in consequence from malnutrition. Therefore these people may need special kinds of food which are suitable to their health. Older people in Saudi society usually prefer traditional food and reject fast food and any other new food, which they are unfamiliar with. (see Al-Shagrawi *et al.*, 's survey (1999) in chapter four)

Food plays a particularly important role in the child's health, with quality of diet serving to increase or decrease a child's resistance to illness. The health of pre-school and school age

children depends on the quality of their diet. So home and schools meals are very important for the children's health which should be of a very nutritious standard. Al-Abdulatif (1989) had elaborated this theme as stated 'Children and adolescents need more food energy than adults do. This is not only for growth but also, to meet the needs of high levels of physical activity. Old people are less involved in physical activities and they need less food energy' (: 185). The family should have clear ideas about what children and elderly members of the family should eat, because good food is associated with good health. Malnutrition may be a major problem affecting the life and well being of children in many underdeveloped countries. Malnutrition results from inadequate consumption or utilization of food, whether due to food supply or to dietary patterns. We can conclude with Howarth saying that:

'food is a vehicle through which to explore and exemplify life course changes, as well as class and gender distinctions in later life. Cultural patterns, developed throughout the life course, influence the nature and extent of resources available to elderly people. For example, widows may be seen by their families as self-sufficient in terms of food requirements, whereas widowers may be offered assistance'. (cited in Arber and Evandrou (ed) 1993:67).

Gender:

Gender is another human characteristic which may play a significant role in determining food choice and dietary habits. Women are usually different from men with respect to the amount and type of food they consume. Females often consume smaller amounts of food than men, and the kinds of food they select are widely found to be influenced by the beliefs and cultural perspectives in different societies. Hamblin pointed that 'women are more likely than men to reduce their food intake as a means of achieving weight loss. Adolescent girls are found more likely than boys of the same age to endorse statements that most people need to lose weight' (cited in Mennel, *et al.*, 1992:56). Bleibtrau gave further examples of gender differences in food choice in regard to Western dietary practices 'there are masculine and feminine foods. Meat may symbolise masculinity, whilst salads are definitely feminine. Women are expected to eat small dainty portions, men can tuck into substantial helpings of heavy foods' (Bleibtrau, 1973:5-11). Fieldhouse (1981) offered the same conclusion in a different way 'Cultural emphasis on body image reinforces the gender-differentiated eating practices. Females are supposed to be slender, young men muscular.

The dieting behaviour of young women in particular reflects a concern with appearance which far outweighs any consideration of health' (Fieldhouse 1986:174). Williams makes the same point: 'sex-related attitudes are reflected in foods. Meat and bread carry masculine meanings and connote the paternal role of hunter, provider, and acceptor' (1973:143). Dietary habits and practices cannot be seen nor understood only from this wider perspective, but also, they should be looked at briefly in terms of their sociological dimensions. In this respect, it is worth while to look and analyse this behaviour in its societal context. As Lupton indicates 'the concerns of a sociology of food and eating, highlights the ways in which choices about food may be made on the basis of assumptions about the most appropriate shape and size of the body as well as its physical health. Bodies are understood as dynamic, not static; they are subject to conscious moulding' (1996:15). In Western cultures, fatness is a state that is viewed as undesirable from both a health and an aesthetic viewpoint. Fat people are often viewed and treated in negative ways and there is great social pressure for them to become slim. Fat women are more likely than fat men to experience their fatness negatively and to experience discrimination as a result of their size. This difference occurs as a result of emphasis that is placed on women's physical appearance. The only way that fat people can become slimmer is to alter their diet in some way. For women this is often very difficult, because of conventions surrounding family meal times and the close contact they have with food as a result of their social roles. As Lupton states, 'Women in western societies are subject to continuing social pressures to limit their food intake for the sake of conforming to norms of appropriate feminine body size and thus develop a pathological relationship with food' (1996:11). A woman is aware of herself as a female. In Western society, a thin, attractive body must be striven for and maintained. This is reflected in public and media images of enviable femininity and a woman finds the desirability of thinness reinforced by both her peers and her husband. Such gender differences in the consumption of amount and type of food are widely found in many different societies. For example, Chapman notices:

'a marked distinction between the food and drinks typically consumed by men and women in a Brittany fishing village, Pork pate, sausage and fat, with white bread, are considered characteristically masculine, while women take cake made of white flour and butter,

correspondingly, where women drink great quantities of coffee, men drink an awesome amount of red wine' (cited in Mennell et al., 1992:55-6) .

Moreover, Caplan mentioned that:

'studies of gender and food often reveal that there are different entitlements' to food as between women and men, both in terms of kinds of food and quantity. She goes on to say that there may be gender-based differences in entitlements because particular foods are associated with one sex rather than the other. This is particularly notable in the case of meat, which in the west is widely linked to masculinity. "Real men" are thought to need meat, particularly red meat". She stated that ' women are much more likely to be on weight-reducing diets than men' (Caplan 1997:10) .

Bourdieu (1984) also stressed this point 'men are seen as larger, needing more food and as eating in gulps and mouthfuls, and hence foods which require picking and nibbling, for example, fish are seen as unmanly, as essentially feminine and suited to needs and inclinations of women' (Bourdieu 1984, cited in Beardsworth and Keil 1997:88).

The cultural impact on food symbolism and gender is vividly illustrated by Ann Whitehead's description 'my memory was of a strict hierarchy of allocation, in which larger size and better quality went to my grandfather and father. In this allocation, my mother reserved the poorly shaped or the worst cooked, or less succulent pieces for herself ' (in Harriss and Haffenberg (ed) 1994:120). In most cultures, therefore, beliefs about food, symbolise aspects of gender relations. Whitehead, for example, noticed:

' for Hindus the way in which food figures in pollution beliefs in relation to caste boundaries and caste behaviour. Eating together is a mark of sameness but there are gender dimensions to Hindu practices too. For example, it is generally regarded as improper for men to eat in the immediate company of women. Women eat after their husbands, and last. In some areas some 'prestigious' food are never eaten by women, while the word 'leftovers' may be used for women's food, rather than the leavings on men's plates. However, the word 'leftover' graphically conveys differences in the kinds of claims that husbands and wives are making on the family food' (Ibid:122) .

As we have seen, gender does play a significant role on what kind of food people eat, it would be helpful to examine the impact of social class on people's food choice and nutrition.

Class:

Social prestige and status are also very important factors which have a great effect on food choice and dietary habits. Food has always been connected with social prestige and status. As

Tannahill explained with reference to the UK:

'whilst the poor sustained themselves with bread, cheese and other simple fare, nobles and landowners might sit down to dinners consisting of twenty or thirty different dishes, many of them containing meat of one kind or another. These grand feasts had a socio-political

purpose in that they symbolized the power which nobles held over the common people and also over food supplies' (1973:85).

Class differences in food consumption still exist in contemporary society, although differences may be in food quality more than quantity. In 1951, MAFF reported that 'high socioeconomic groups are generally reported to consume a greater range and variety of foodstuff which are more likely to accord with the nutritionally approved orthodoxy of the day, than those lower down the social scale' (cited in Mennell, *et al.*, 1992: 54). Upper class people in western societies are observed to consume special types of food, such as skimmed milk, fruits, brown bread, baked and grilled meat and other foods which are highly recommended for the maintenance of a good and healthy diet by nutritionists, while lower income people usually consume foods which contain high amounts of animal fat, white flour bread, full fat milk and fried food. They are more likely to use tinned and frozen rather than fresh food. Eckstein indicated that 'if one has a large array of choices then one has high status. The ability to choose freely is linked closely to economic factors; financial position has always been a measure of status and this is reflected in the goods and services which are purchased' (Eckstein 1980) Fieldhouse underlines the complex relationship between social status and food preferences:

'Status is earned by the nature of the food served. High status is attached to exotic food, complex dishes and usually too expensive items. The source of status-points may be the wealth which the food signifies. Status may derive from time and talent brought to bear on creating elaborate dishes. Perhaps we can distinguish the good cook from the good host, both of whom attract social kudos and thus acquire high status. Apart from reflecting on the host's own status, the foods served at dinner parties can also be a comment on the status accorded to the guests. Thus for high-status guests every effort will be exerted to prepare elaborate fare' (1986:79).

Social prestige may be connected with the circumstances and manner in which food is served. For example, social rules prescribe who can eat with whom. Fieldhouse used the example of the caste system in India to emphasize the impact of class on food choice and dietary habits:

'high-caste Hindu Brahmins do not eat with untouchables, high-status medical consultants do not share the same dining room with low status interns, or with nurses or dietitians. In many parts of the developing world it is traditional for the person with highest prestige to eat first. Some of the strictest rules governing who may eat with whom are provided in the Hindu caste system. These rules are linked with concepts of purity and pollution. What food may be eaten by each caste and exchange of food between castes are also subject to control' (1986:77).

Historically food has always been subject to fashion as, Fieldhouse notes:

'foods may assume a high status within a society simply because they are consumed by high status groups. Examples of this are provided by white sugar when it became available in Elizabethan England, it was an expensive commodity which could only be afforded by the rich. It thus became a symbol of affluence and status to which others, lower in the social hierarchy, aspired in an attempt to elevate their own social standing. Once white sugar became widely used throughout all strata of society it lost its status value: now brown sugar has assumed the mantle of prestige. A similar pattern may be seen with white bread. As milling procedure became perfected white flour replaced the coarse dark flour which continued to characterize peasant status. Everyone wanted white flour, despite its inferior nutritional value and taste' (1986:79-80).

Thus, social factors determine and shape food habits and dietary practices of any society.

Musaiger affirmed this point as he put it 'groups are formed on the basis of economic status, education, residence occupation or family. Sub-groups are established on the basis of region, religion, age, sex, social class, occupational groups or politics. Food habits perform significant social functions some of which are sociability, warmth, friendliness and social acceptance' (1987:150-73). Tangerman (1986) indicated that 'one of the factors that led to change in food consumption pattern is the increase of the middle class that gradually and persistently adopted the consumption pattern of the rich class' (1986:36). Moreover, Bourdieu (1989) has shown in his discussion of class distinctions in France that 'the choices people make over what they eat reproduce symbolically their class position, though income may appear to be a determining factor in what people eat' (cited in James 1997:74).

Since what people buy and what they eat tell others that they are rich or poor, then in this context food choice becomes not only a manifestation of individual personality, but also, of social class, which truly is shaped and affected by people's income.

Income:

Nowadays, we live in a world which depends heavily upon and is shaped by economic trends. Disposable income has therefore, a great impact on food choice, determining the types, quantity and quality of food which different groups of people can eat. Khaldi, (1984) indicated that 'income is considered as one of the main determining factors of food consumption patterns. Family income in Gulf countries, for example, increased during the period between 1973-1980 by 10% per annum' (1984:40). This increase was mainly attributed to the increase in oil revenue, and led to remarkable changes in the food consumption patterns in these countries. Generally

speaking, increased income led to an increase in the consumption of more animal proteins such as, meat, chicken, milk and eggs during the 70s and 80s, and such consumption remains relatively high (FAO, RNEA 1997). Having the financial resources to purchase adequate amounts of food does not, therefore, ensure the purchase of the right quantity or quality of foods. WHO underlined this point arguing that 'increased income generated does not guarantee an increase in adequate food purchase. Numerous instances are available to indicate that additional money obtained through such measures is often utilized for expenditures which have nothing to do with health or nutrition promotion' (WHO 1990:33) Douglas also exposes the complexity of the effects of income on people's diet:

'the availability of food is influenced in the first place by the processes of production and distribution. A stable food supply in a country, resulting from a flourishing system of food production will, however, not always ensure the accessibility of a sufficient quantity to every group in the population. The organization of food distribution, including markets, price and networks shapes the opportunities or obstacles to people's eating sufficient quantities of food. Feasts often form an opportunity for the redistribution of food, they still play a major role in the third world communities today' (cited in Mennell *et al*, 1992:61).

By contrast in many affluent countries availability of a variety of foods in every supermarket and the possibility of eating out in restaurants, where every kind of food is found, may lead to an increase in eating disorders, such as obesity. Thus, the economic conditions of a society directly or indirectly affect food choice and health standards. Easy availability of foodstuff encourages people to consume excessively, especially on social occasions and parties, regardless of the nutritional value of the items. Mennell *et al*, dealt with another aspect which determined people's diet and eating:

'shortage and plenty, fasting and feasting, and poverty and wealth are intimately related, for the all have to do with the quantity of food to which different groups of people at a certain time have access. Material wealth implies the possession of all sorts of goods, including plenty of food, which can easily be given away on the occasion of feasts. Poverty very often means a shortage of food which in turn will include hunger and fasting by coercive external circumstances. Voluntary fasting (aside from the religious and ascetic) is often restricted to individuals and groups living in affluence, including an abundant food supply, otherwise, one has no choice' (1992:61).

There is, therefore, a strong linkage between income, food choices and dietary habits of people all over the world. We can conclude that economic status is the most important factor affecting people's food choices, and a major determinant of food and eating practices.

Politics of Food:

Food policies and regulations in a society should be considered as another decisive factor in determining people's food and all food processes. Marsden *et al.*, cited what the Ministry of Agriculture, Fisheries and Food (MAFF) set out as guideline for food and hygienic processes as follows: 'Food Hygiene Directive's operation should cover the preparation, processing, manufacturing, packaging, storing, transportation, distribution, handling and offering for sale or supply of foodstuffs not covered elsewhere by product-specific hygiene directives' (cited in Marsden *et al.*, 2000:21). This British guideline could be of valuable implication to many other countries. Also, these responsibilities could not be effective without close professional supervision and direction, but when it comes to the practical situation in food choice, the politics of food plays an important role in shaping food choices which people make. Moreover, in many countries there are special government departments and agencies, whose responsibilities are to watch, to make rules and to issue permission for the sale and distribution of any food products meant for public consumption. Mennell, *et al.*, emphasize this point:

'during the 1980s, certain national governments, in accordance with the initiatives from the (FAO) and (WHO), started to develop national food policies, intended to be coherent bodies of measures. There are two main goals; First, to prevent illness and to further public health by informing people about the importance of a 'prudent diet'. People are advised in numerous ways to eat more fruits, vegetables, and fiber and fewer foodstuffs containing fat. Second, a food policy purports to guarantee the safety of food products which means issuing and enforcing rules and regulations for food producing, food processing and food distributing companies. In modern Western countries complex organisations and institutions have been set up for this purpose. These organizational networks fulfil several functions, the most important of which are public enlightenment and education, research and control' (1992:39).

A very specific case of the impact of food policies and rules in shaping public diet is the Norwegian case as discussed by Kelpp-Knut and Forster: 'the Norwegian nutrition and food policy, for instance, strives for four goals to promote healthy eating habits, to help stabilise world food supply, to increase national self sufficiency in food production, and to strengthen the rural economy' (1985:447-63) Healthy food becomes an indispensable and vital matter which many governmental agencies put as their first goal, a view put forward eloquently by Bumett, (1989) and Van Otterloo, (1990): 'the growth of the food industry was another factor; standards for the

safety of products were developed with the passing of national laws against food adulteration' (cited in Mennell et al., 1992:35). In Douglas's view, however, 'food policies often take no account of the ways in which the use of food is embedded in the socio-cultural habits of the people whose diet is intended to change' (1984a:1-7). Keane's review of healthy eating policies argues that:

'the official perception of such information as straight forward facts which the public can choose to accept or ignore has to be questioned, since the government exhorts consumers to choose healthy food, while leaving industry to regulate itself'. (Keane in Caplan. 1997:18). Healthy eating is clearly a political issue and the majority of information about food and health is driven by commercial considerations, particularly in terms of advertising and product descriptions and, more implicitly, by the government's reluctance to intervene in the freedom of the market. This reluctance to intervene is in contrast to highly interventionist policies pursued in relation to food production, particularly since the introduction of the common Agricultural policy. The unwillingness to legislate on the quality of information provided by the food industry clearly limits the possibility of accurate information being made available to the public' (Keane 1997:179).

Regulating nutritional policies in a given society has to take an account of all segments of the society, either rich or poor, and the latter makes up the largest segment of the society. Thus, as WHO clearly state:

'the objective of increased food production in a nutrition policy should lay great emphasis on those foods which are preferred by the nutritionally vulnerable poor segments of the population and which may actually be cheaper to produce than some of the items commonly targeted for increased production. The agricultural policy of the country should ensure that adequate amounts of cheap, nutritional food are produced which are accessible to the poor' (WHO 1990:32)

Therefore, political considerations may certainly influence individual food choice which undoubtedly might be shaped by food fashion of that society.

Food Fashions:

Food like other aspects of life in society, undergoes change according to fashion. For example, as this thesis will explain in Saudi Arabia, in the past, certain traditional food dominated the Saudi diet, but the economic boom has introduced dramatic changes in Saudi society, including what is regarded as fashionable to eat. There is an increasing number of Eastern, Western and traditional restaurants, especially in big cities, serving new and different kinds of cuisine. The most recent food fashion in SA appears clearly in the fast food restaurants, a trend especially prominent among young people. This can be found not only in developing countries, but also, in developed countries as well. Another example of food fashion is the wide

usage of bottle feeding in many countries perceived as being fashionable, and so greatly desired, even though breast-feeding is the ideal balance of nutrients for the human baby and recommended where possible. Also, the widespread international restaurants and food markets in S.A. can make it difficult for people to choose among various types of food, especially when people are exposed to the commercial advertisements of food companies. Food fashion in any society is shaped by many factors and one of the most important is food innovation, which is acknowledged by social scientists as a feature of social change, and which can be seen as part of the whole processes of globalization itself. Diffusion theory explores how the dissemination of any innovation, such as new health related behaviours, frames throughout society' (Rogers 1983). It also attempts to explain behavioural change in relation to diet and dietary habits within societies. Therefore, food innovation is a part of food culture. Gabriel, for example, notices that 'it is the kind of food made available for money, from commercial outlets such as shops, take-away, fast food and other restaurants, that has been identified as a twentieth-century revolution in our eating habits' (cited in Beardsworth and Keil 1997:100). Food innovations have great impact on food choices and are part of a dynamic process of continuous change. When changes in food consumption take place they may create widespread and unexpected changes in other aspects of society. For instance, people started consuming white bread, animal fats, sweets, potato, and other types of food more than the consumption of fresh fruits, vegetables, wheat, corn, and other fresh food. The latter were replaced by sandwiches, sweets, canned and frozen food, soft drinks, tea and coffee of different kinds. Food fashions could be diffused either in a smaller or bigger scale, nationally or internationally by globalization of food. And that is quite true as we live in a global village.

Globalization of Food:

The global village has become a reality nowadays, with the world's countries closer than any time in the past, and globalization as Albrow describes:

'the term globalization, increasingly used in the 1980s and 1990s in a number of fields, in fact first appeared in Webster's Dictionary in 1961. This marked the beginnings of explicit recognition in the contemporary period of the growing significance of the worldwide connections of social

events and relationships. There has been a transformation over the last 25 years or so in the meaning of the word global in sociology, from meaning total, as in total society, to meaning a focus on the globe as a unit of analysis in its own right' (Albrow 1989:5-6).

Albrow, sums this up as follows: 'globalization refers to all those processes by which the people of the world are incorporated into a single world society, global society' (1989:9) Archer's echos the broad scope of this phenomenon:

'globalization is the present process of becoming global. Each major aspect of social reality (the structure, culture and personality of traditional terminology), is simultaneously undergoing globalization, as witnessed by the emergence of a world economy, a cosmopolitan culture and international social movements'. 'Globalization affects everyone since it presents them with a world context which influences them in some of their doings' (1990: 1).

A perfect manifestation of globalization is world cuisine, which would not be possible without technological innovation and advancements. As Mennell *et al.*, describe 'modern food technology has had a tremendous impact on Western societies and even on world society as a whole. This impact is felt across the whole range of production, distribution, preparation and consumption which constitute the main phases in the social role of food' (Mennell *et al.*, 1992:68). A perfect example of the impact of globalization of food on British food is given by Beardsworth and Keil:

'Britain was able to draw upon food supplies on worldwide basis: Grain from the Midwestern USA, dairy products from Denmark and Holland; beef from Argentina; Lamb from Australia, tea from the Indian sub-continent, coffee from Brazil, cocoa from West Africa, sugar from the West Indies. All this was made possible by emerging international agricultural specialization combined with the improved transport over long distances' (Beardsworth and Keil 1997:37).

Zubaida gave another example of food globalization in relation to the Middle East:

'Ethnic restaurants run by migrant communities in Northern European and American cities also have to respond to this search for exoticism and national cuisine, beyond kebab, homous and tandoori. Restaurants with signs proclaiming 'Indian cuisine', 'peking cuisine' or whatever, offer what is by now a familiar repertory, specific to restaurant catering. There are signs, however that, these repertories are being enlarged in certain enterprising establishments, to cater for seekers of authenticity and exoticism. The recent trend in television serials on national foods and their regions (and the much larger field of travel and cookery books on this subjects), may very well come round to Middle Eastern countries, when it has done Italy and Spain and the Mediterranean. That is one more source in the construction of national cuisines and their regions' (1992:25).

Zubaida demonstrated the globalization of food as the follows:

'Processes of diffusion between different parts of the world have been going on for a long time. A good example of imperceptible diffusion is the Cairo Kushuri, an ever-popular street food. It is a dish of rice and lentils, often bulked up with even cheaper macaroni, served with a garnish of fried onion and spicy sauces. There are no satisfactory accounts of the origins of this dish in Egypt. It is the Indian Kitchri, also made from rice and lentils and spices. And it must have reached Cairo through the British forces. Long before the hamburger and the fried chicken, colonial circulation spawned a popular staple, which Cairo made its own. International diffusion and economic pressures have led to greater diversity' (1992:16)

Another example of food globalization is the worldwide spread of McDonald's, as Law suggests this is a 'world-wide success precisely because it has a theory concerning the interests of its customers and it attempts to play upon their dreams and fantasies in order to increase sale' (Law 1984: 171-96). Fast food restaurants like McDonald's and Burger King become an international phenomenon due to the fact that people seem to be in a hurry nowadays and these international firms are offering what people are looking for as Zubaida notes:

'fast food can be both quickly procured and quickly eaten. Food is eaten while one is standing up or sitting down at a table to which one has carried one's own meal. Fast food has nothing to do with preparation. Lentil soup may be quickly eaten, but it is not quickly made. Yet, the quintessential fast food item, the McDonald's hamburgers, though rapidly cooked and eaten, is the product of a much longer industrial process of quality control and packaging than the ingredients of a Turkish Lentil Soup' (1992: 65-7).

Also, Al-Ahmady in Al-Riyadh newspaper reviewed a book under the title "Fast Food Nation" by Erek-Skaluser and gave some facts about fast food restaurants where 85% of USA labour force have their lunch daily. In addition to that, Mc Donald's company the biggest firm in this business has more than 20,000 branch in 140 countries in the world. It's budget is three times higher than Gulf countries' budgets. It is the highest world company in the consumption of cow's meat. And 15% of potato production in USA. It is the second largest company in employing workers in U.S.A. Moreover, this company established in 1961 its own university in Chicago to train its employees about methods and regulations of preparing, cooking and serving food. Mc Donald's restaurants increased rapidly in most of countries. For example, in Japan there are more than 1000, in Canada 940, Germany has 630 and 500 in the U.K. The company has opened 78 restaurants in Saudi Arabia within the last 9 years. Moreover, 20% of its profits come from outside U.S.A. The wide growth of fast food restaurants had great effects on the decrease of traditional food restaurants in many countries. (Al-Riyadh No. 12400. 6/6/2002:52). Moreover, Al-Sharq Al-Awsat Newspaper gave some of the latest facts about this gigantic company. For instance, it opens a new branch each 7 hours and serves about 46,000,000 meals a day worldwide. (Asharq Al-Awsat No. 8713. 6/10/2002:28).

Saudi Arabia is not an exception in food globalization, where the world's different famous restaurants can be found in great number in major cities. We cannot find a better analysis of the globalization of food than that of Goody, who commented 'the existence of a world cuisine has become a reality. The development towards the internationalization of eating habits and cuisine has been strongly facilitated by the growth of international food industries and large scale trade in food' (1982:139-42). Food globalization could not take place worldwide without the advancement of food technology.

Food Technology:

We live in an era of technological revolution. One realm of modern technological innovation is food production, which has an impact on food choice. This impact is felt across the whole process of production, distribution, preparation and consumption worldwide. Other trends and inventions also, helped to make it possible for people to vary their daily diet. Railroad refrigerator cars enabled growers and meat packers to ship their perishable products over great distances and to preserve them for longer periods. In addition to that, the increased usage of iceboxes enabled families to store perishable items. The icebox came into use in most homes and remained so, until the mechanized refrigerator replaced it in the 1920s and 1930s. Almost everyone has a more diversified diet as a result. Technological changes in production and processing implied a massive increase in the size of markets of foodstuffs and growth of an extended retailing system of various types of food. Mennel *et al.*, indicated that:

'the restructuring of life embedded in the more general social process of industrialisation has had far-reaching consequences for meals and meal patterns as did the industrialisation of foodstuff production. The time, the number, the composition and the temperature (hot or cold) of meals changed during the process of transformation from agricultural and artisan societies to industrial and urban ones' (1992:70).

Strasser (1982) offered a convincing argument and a social analysis and explanation of the crucial role played by advancements of food in improvement of the people's diet:

'improved food technology meant the availability of substitutes such as beet-sugar and margarine, and new food products, ready for use, developed from their origins in earlier centuries into a proliferation of new versions for twentieth-century mass markets, dehydrated potato and maize, evaporated milk, biscuits, cornflakes and other breakfast cereals, tinned meat, fish and fruits. All these products changed the plight of the kitchen-maid and the housewife. Preparation of food at home was also made easier when open fires were

replaced by gas or electric stoves and piped water in houses and kitchens became nearly universal '(cited in Mennel *et al.*, 1992:70).

The most important implication of food technology and the quantitative and qualitative change in food supply was considerable rise in consumption of high-energy meat and dairy products and use of a larger variety of foodstuffs. Mennel *et al.*, indicated that:

'the new technologies, in an important way furthered the development towards the production of convenience foods and fast foods. A far-reaching consequence, in turn, was the rise of an internationally oriented fast food industry with ramifications at the level of distribution resulting in changes of supermarkets as well as of snack and fast food restaurants, this development takes place on two fronts eating at home and eating outside. The time needed for food preparation at home has been drastically reduced with the availability of a variety of prefabricated foods in every supermarket. This is even more the case when kitchens are equipped with advanced equipment and implements like food processors, freezers and microwave ovens, which follow the tin-opener and the refrigerator. Individual household members can now quickly and easily, take care of themselves at times to suit their own convenience, which creates greater possibilities for fewer meals being consumed together' (1992:72).

Technology can be considered as one of the most important factors which has led to many tremendous changes in the realm of food choice and dietary habits in Saudi society. The availability of technological equipment has helped in the preparation of a wide variety of foods. Having many different cooking appliances in the kitchen makes it easier for women to cook many different types of food, as will be shown in Chapter Four. Modern technology has also helped Saudi people to obtain widely diversified foods and drinks imported from other countries all the year. Frozen and preserved local foodstuffs are available too, and they constitute an integral component of the Saudi family diet today, whereas in the past, most Saudi families' diet was fresh, locally and seasonally produced.

Another feature of food technology innovation in food industry is what Family Health Encyclopedia labelled as food additives. 'these food additives include, antioxidants, colouring emulsifiers and stabilizers, and preservatives' (1990:455). Some of these additives may have negative side effects on people's health, such as:

- Additives may cover some inherent defects of the food item.
- The external qualities are enhanced at expense of dietary value.
- Some additives have very serious effects on health.

- Some factories do not adhere to allowed limits of additives but exceed them, which may affect the consumer's health.
- Improving food colour leads to increase in demand thus intake of larger quantities with extra additives. This has serious risks, especially to children, as they are naturally encouraged by artificially coloured foodstuff.

Food technology appears to have great effects on people's food. And mass-media could be considered as an important means of helping the diffusion of people's knowledge about food technology.

Mass-Media:

'Mass-media are those mediums of communication by which information, ideas, opinions and knowledge are transmitted to large number of people in the population at the same time' (Selfe 1987:145). Mass-media, especially television and satellite channels, play a great role in influencing food choice and dietary habits through commercial advertisements arousing desire of consumers, particularly children, often these are focused on unhealthy food products, like sweets, fatty foods and beverages. As Fieldhouse emphasizes 'it is evident that children are exposed to a large amount of food advertising and that the products advertised are often inimical to long-term healthy eating habits' (1986:4). While Keane, for example, indicated that kind of situation in Britain:

'the money spent by the Health Education Authority (HEA) on nutrition education is insignificant compared to that spent on food advertising. For example, the (HEA) received \$ 700,000 funding specifically for nutrition education for 1996-7.' (Personal communication, Department of Health 1996), while in 1995, 551 million was spent on food and drink advertising. (Personal communication, Advertising Association 1996 'Confectionery is the most heavily advertised food category followed by Coffee, fast food and soft drink' (Keane 1997:179).

Mass-media have become an international and global phenomenon which shapes people's thinking and behaviour in general, and food choice and dietary habits in particular, as will be discussed in Chapter Six in relation to its impact in S.A. Not only that, but also, mass-media facilitating and encouraging to understand and accept the other cultures. In this sense communication channels between different cultures become widely opened.

Contact with other Cultures:

Individuals may be subjected to various influences resulting from contact with other cultures through migration, travelling abroad or colonialization. These three factors might be of great importance in introducing various changes in people's life in general, and their food choices and dietary habits in particular, as will be shown later. In this research, for example, 71.9% of the study sample were born in cities. And one can expect this might bear some changes and alteration on their diet and dietary habits and practices.

Table 2-1 Distribution of respondents according to place of birth.

Place of Birth	Fr.	%
City	223	71.9
Village	77	24.8
Bedouin Area	10	3.2
Total	310	100

The survey results summarized in table 2-1 indicate the majority of respondents, 71.9%, were born in cities. Living in cities may affect people's dietary habits and the kind of food they eat. Availability of restaurants, especially fast food outlets, may make it easy for people to have some of their meals outside. The next largest group was that of villagers, 24.8%. Few respondents were born in Bedouin Areas, 3.2%. Villagers and bedouins usually prefer traditional food rather than non-traditional food.

Migration, travelling abroad and colonialization induce people to use many new kinds of food. For example, potatoes, sugar-cane, maize and many kinds of fruits and vegetables as food products moved from one society to another and were mixed with foreign food, each in its own way. Mennel *et al*, emphasize this point 'the movement of foodstuff meant the start of the development of a world cuisine' (1992:75).

Acculturation:

'Acculturation refers to the process by which groups and individuals adapt to the norms and values of an alien culture' (Fieldhouse 1986:8). The eating habits of the older generation do not change so easily, but, they do change among the young, and in the case of Saudi society,

economic and social changes and interaction of Saudi people with other cultures have greatly influenced contemporary Saudi dietary habits to be explained later. Such interaction led to adoption of some dietary habits unknown before. They replaced some native dietary habits, especially of the young generation. Apparently, the fast food culture of Western countries has greatly influenced the young generation of Saudi society. Hamburger, french-fries, different kinds of pizzas and pastas, sandwiches, and many other kinds of Western and Eastern food are sold and served by many restaurants especially in major cities and towns. The number of restaurants in Riyadh is (10257) see table 4-16. Also, Al-Onaizi (1998) in his study found that 66.3% of the study sample agreed about wide spread of fast food restaurants in Saudi society. People depend less on their traditional food, especially in big cities and among young people, with western and oriental cuisines replacing some traditional food items, as will be shown later in tables 4-19, 4-20, 4-21, 4-22 and 4-5.

Environment and Climate:

The environment and climate are fundamental factors in determining food choice and dietary habits in any society through factors such as topography, climate, occupation, housing, social environment, beliefs and ideologies. Moreover, these factors can impose their impact on foodstuff and its preparation and consumption. There are noticeable differences for instance, in people's diet in cold climates and hot climates. Murcott eloquently explains the complex relationship between food, drink and nature 'Food and drink, would appear to be one appropriate mechanism for the expression of meaning and values concerning the relationship between nature and culture, between the spheres of human and animal species, and concerning the boundaries of civilization' (1983:11). The way in which people conceptualize food and its relationship to health and illness tends to reflect and strengthen dominant values of that society. Geographical location, for example, influences the type of food taken by Saudi people. Bedouins who used to live in the desert and rear animals (sheep, goats, and camels) depend on milk with its dairy products and meat. Farmers rely on wheat, vegetables and fruits more than any other food. The population of coastal areas consume a large amount of sea food, in addition to other foodstuff. Climate also affects food

choices and requirements. In summer, when the temperature is high, human activities are at a low ebb, and people consequently need fewer calories than in winter. The hot climate in SA in summer encourages people to drink various types of soft cold drinks, carbonated beverages being the most common.

The complexity of the various and different factors outlined above which are responsible either directly or indirectly in shaping food choice and dietary habits can be seen in (Figure 2 –1). This conclusion about factors shaping food choice and dietary habits generally speaking is shared by the WHO. People are influenced by various factors like social status, religion, and taboo and food preferences as a result of external influences. Purchasing power and nutrition awareness are thus the two most important prerequisites to creating nutrition demand in the nutrition policy' (WHO 1990:33). After exposing those factors which could be taken as the most common in shaping and effecting people's diet and dietary habits from a general point of view, eleven studies will be introduced to shed some light on conditions in SA in particular, which is the core of this study.

Factors Influencing Food Choice

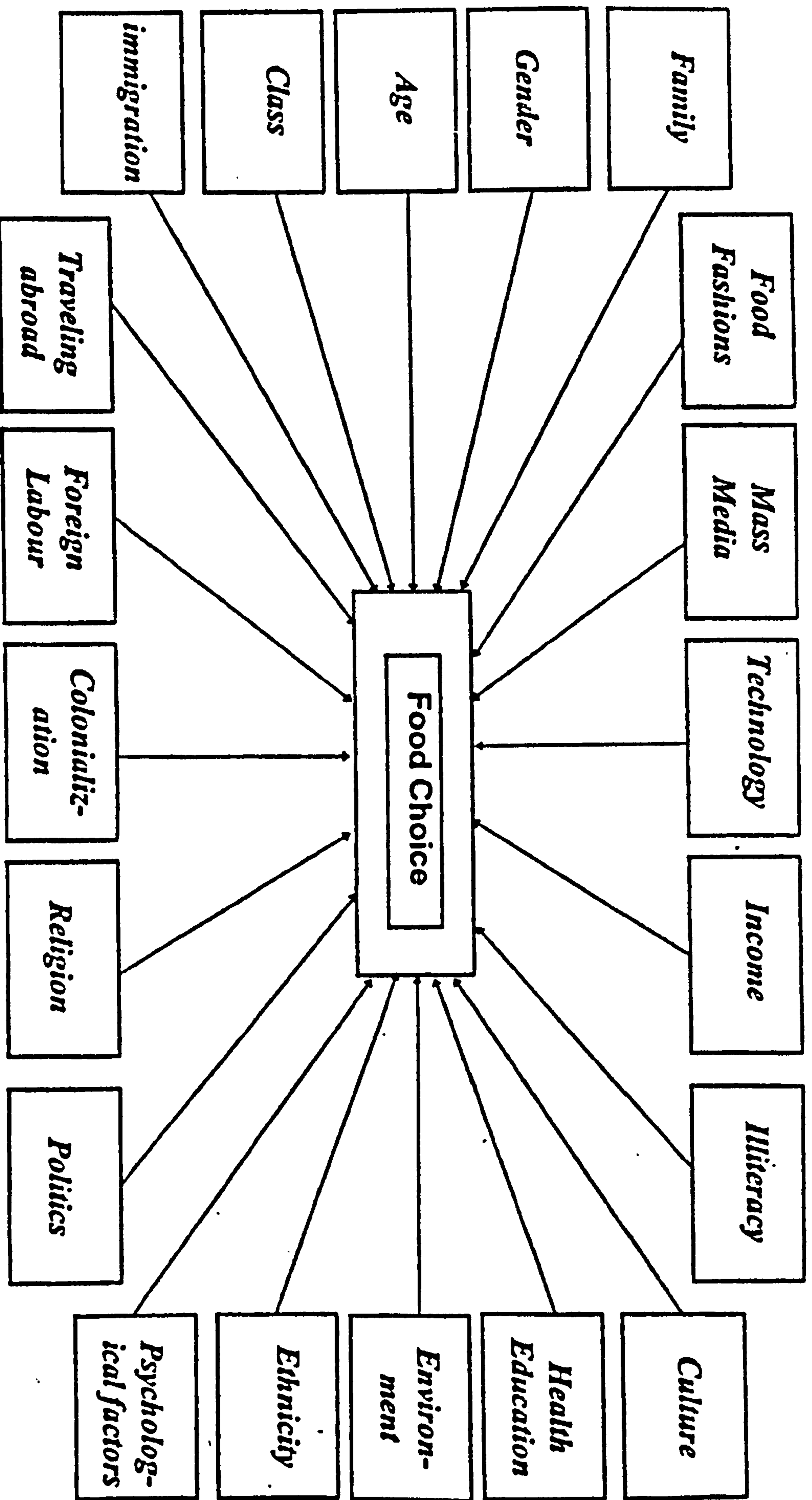


Figure (2-1)

Diet and Dietary Habits in Saudi Arabia

As noticed in the previous section food choices and dietary habits are determined by a combination of physical, economic, cultural and social factors, such that 'people like what they eat, rather than eat what they like' (Lewin 1943: 108). Several factors are known to have had an influence on food consumption patterns in the Gulf countries, but increase in income may be one of the most significant factors responsible for the change in food consumption patterns, especially after the sharp rise in oil price at the end of 1973. Musaiger for example, states that:

'the state of nutrition in the Arabian Gulf countries has not kept pace with the economic development. The rapid change in life-styles as a result of urbanizing and increase of income have led to the development of a paradoxical situation, as both types of nutrition problems exist. Those associated with affluence such as obesity, diabetes, hypertension and heart diseases, and those associated with underdevelopment such as growth retardation, anaemia and infectious diseases. It appears that the majority of nutritional problems are mainly due to a change in food habits. Illiteracy and ignorance, rather than shortage in food supply or low income' (1985:165-6).

Diet and dietary habits are therefore, not immune from the general natural tendency of change and dietary habits will ultimately touch upon and effect the health of Saudis as some previous studies, discussed earlier, have already begun to explore.

One difficulty this study has encountered is the lack of basic sociological health studies to complement medical health studies about the effects of dietary habits on health of the Saudi family. There are, however, a few studies available, which might help to give an overall picture of the dietary habits and health in Saudi society. These will now be examined in order to outline the context within which the present research can be viewed.

The first study to be discussed was carried out in 1979 in Tamnia villages on the Sarawat mountain, a province in the south west of Saudi Arabia, by a team from King Saud University, Faculty of Medicine, and King Faisal Specialist Hospital. It shed light on certain aspects of the health problems of children and how they were to be met by the primary health set-up. It also, indicated the distribution of children with deficits of weight for height, which showed wasting or acute malnutrition and the distribution of children with height-for-age, indicating

¹- Most of this paragraph is cited from Al-Abdullatif. (1989: 28)

stunting or chronic malnutrition. The prevalence of children with moderate wasting was 2% and less than 10% of the children were severely wasted. 23% of the children were found to have moderate stunting while 4% were found to be severely stunted. The relatively high prevalence of moderate stunting among 23% of children may imply the presence of past long-term nutritional deprivation of a more subtle nature in combination with chronic and recurrent infectious diseases. The unusual difference between the moderate degree of stunting and wasting can be explained either by a change over time in quantitative and qualitative food intake, diseases of early childhood or genetic factors. Also, for pre-school children in Tamnia, the study found that 28% of pre-school children need planned action in terms of better curative and preventative health services. The laboratory test findings revealed that a significant number of children were anaemic. The anaemia, though usually mild, was most often due to nutritional deficiencies or to parasitic infection. The study team concluded that the most striking clinical feature of pre-school children was the disturbance in growth. The nutritional problems in Tamnia stemmed mostly from a lack of awareness on the part of people of the nutritional values of various foods which were already available in the community. The study team was of the strong opinion that the high incidence of moderate stunting could be due to the synergetic action of pneumonia, diarrhoea and malnutrition during childhood. Finally, the study team was strongly in favour of well-directed community-based health care programmes including health education, immunization and nutrition to improve health conditions in their study areas (Sebai 1981b:89-96).

Although this study is an old one, it has been chosen for several reasons: Firstly, it gives a general picture of health condition 23 years ago in one area of Saudi Arabia, and Secondly, it was preoccupied with assessing the health status of pre-school children and the interrelated socio-economic and environmental factors, this can be considered as one of the pioneering studies in the realm of world health. Finally, it gives proof that academicians, especially in medical schools, can take the lead in advancing and promoting health and dietary habits in the country. This is important and relevant to this thesis.

The ¹second study was carried out in 1980 by a team of teachers and medical students from the Faculty of Medicine, King Saud University in Riyadh. It was carried out in two villages in Qasim region, 400 km north west of Riyadh. These two villages are Ainbin Fihaid and Khusaiba in the north east of Qasim. This study arrived at these conclusions. There was a high prevalence of nutritional anaemia in pre-school children of Qasim with 29% of the sample below normal values. Malnutrition was a health problem in some parts of the Kingdom, in spite of the vast economic advancement. This was partly ascribed to lack of knowledge among the people about the nutrient values of food. Most mothers in the study area were illiterate and none had completed primary education. It was suggested that the water storage methods should be improved to reduce this excess iron content. Both amoebic dysentery and trachoma are diseases strongly associated with a contaminated environment and with the lack of an adequate amount of clean water for drinking and washing. (Sebai 1985:97-129)

A third study was carried out (1988) in the Military Hospital in Riyadh by Andrea Gibbon. The objective of this study was to compare the new types of dietary pattern becoming commonplace in the Kingdom to the traditional diet and it postulates how changes in diet from traditional foods could be influencing the disease pattern of the country. The study found that, the dietary habits of the Saudi people have been influenced by the influx of foreign workers into the country, increased availability of a wide range of imported goods and increased spending power. Along with the increased wealth of the country have come inevitable changes in lifestyle for a majority of the population. The sedentary lifestyle unknown to people before has become the norm as people move to cities and new diseases of affluence are appearing. Their dietary habits in the past, determined by the limited availability of food, have changed in particular due to influences coming from an influx of expatriate workers from the west and third world countries. Traditional eating habits still prevail, but intermingle with a range of good and bad eating habits, leading to an upsurge in the incidence of obesity, which is the biggest diet related

¹-This study had been explored in Al-Abdullatief. (1989 : 24)

problem that is prevalent in SA. Trends in the diet away from traditional foods show a dramatic increase in the consumption of sugar, fats and oils. Milk, dairy products and other sources of animal protein are consumed regularly. Vegetable oils, particularly corn oil, are relative new to the diet in SA, contributing greatly to the total fat and calorie content of the diet. Arabian coffee with cardoman is more popular and taken without sugar. Tea is taken sweetened and in large quantities throughout the day. Traditional foods are in decline and are being replaced by rice and white bread. In this study it was found that bread was eaten by all respondents more than once daily. Rice was the second most popular carbohydrate being taken daily by 76% of the sample. Soft drinks were popular with the majority where more than 50% drank them once or more daily. Dates were still extremely popular. A wide range of other sweet foods were taken but these were less frequent and interestingly, traditional Arabic sweets were taken generally less than once each week. Eggs and cream were the other popular foods being taken usually at breakfast with bread. Liver and kidney are consumed frequently. Lamb meat was taken more than once a week by 96%, and daily by 20% of the respondents followed by chicken. While beef, meat and fish were quite unpopular, vegetables seem to be less popular. Fruit was taken more often than vegetables. Also, another finding of this study is the incidence of diet related diseases which are on the increase. For example, there were 37% more patients with diabetes in 1987 than in 1983, and there was 44% increase for hypertension in the same period. Cardiovascular disease appeared also to be on the increase. All these diseases can be linked to diet, particularly to obesity. The study concluded that all these diseases are the product of the adoption of dietary habits influenced by increased wealth, traditional social habits and very heavy advertising by western food manufactures. Also, the study showed that 74% of the respondents were keen to learn more about diet and health, as these people are becoming more aware of the effect of unhealthy dietary habits on their health. Finally, Gibbon's study suggested that promoting health awareness programmes must be chosen wisely bearing in mind the high rate of illiteracy and the social and religious influences on the diet.

A fourth study conducted in the Middle East by Rifat (1988) found that there were 80 million children in the region, two-thirds of them facing disease due to protein deficiency and insufficient calories causing many nutritional problems. Malnutrition causes relatively slow growth of the human body and leads to other problems such as anaemia, which is the result of lack of iron. It affected not less than 20% of children, as did rickets, and the resultant poor immunity of the body to fight disease exposed children to contagious diseases. Malnutrition starts at a very early stage, even, before birth during gestation. Mothers who were under nourished during their pregnancy gave birth to weak babies who remained affected by subsequent malnutrition. Insufficient natural breast-feeding of babies was also, a cause of malnutrition, because babies who depended on artificial feeding, faced unfavourable hygiene conditions related to cleanliness, quantity and quality of milk. (1988:185-9).

A fifth study was conducted by Kary in (1989) to evaluate the level of health awareness of Saudi women and how it is affected by their educational level. This study showed that: Saudi women, especially educated ones, had some knowledge of issues related to health and health of their children. Women had also knowledge of many things about child development such as the age of appearance of pre-molar teeth, sitting, walking of babies etc. They also knew the reasons behind children's diseases and how to take preventive measures against whooping cough and measles. However, they had little knowledge of diseases resulting from malnutrition. Finally income affected health status because high income people could afford to pay for healthy food, private doctor consultations and to be treated in private hospitals (1989:67).

A sixth study was conducted by Al-Othaimeen. (1991) This study came to the following conclusion: Saudis of higher socio-economic status attended parties and ate outside more frequently. Moreover, they ate breakfast less often and took more bedtime snacks. Not only that, they also, increasingly used condiments like pepper, soy sauce, garlic, lemon and chilli sauce following the pattern of upward social mobility. Fatty food was consumed more frequently, as well as lamb, chicken and lamb liver. Raw vegetables, macaroni, sliced bread, rolls, yogurt, milk shake, Arabian coffee, sweets, juices and 'junk food' were found to be taken more by the higher,

than by the lower socio-economic groups. Being high on the social scale does not therefore, guarantee having healthy eating habits. New foods like beef, veal and cold cuts of lamb, chicken and liver were slowly added into the Saudi diet. Tea replaced Arabian coffee. Sliced bread, samoli (a thin and unsliced white bread) and rolls were added to the traditional Arabian bread. In the meantime rice replaced wheat. Furthermore, fresh cow's milk replaced goat, sheep's, or camel's milk. Butter and corn oil replaced ghee. The introduction of soy sauce, chilli sauce, more fruits and vegetables, cheeses, rich pastries and 'junk foods' became part of the Saudi diet. Moreover, consumption of lamb liver, *foul*, cheese and eggs became popular for breakfast. The habit of drinking Arabian Coffee has however still a common practice. It is not surprising to find these old traditions of eating and drinking remaining in spite of exposure to several other cultures. In this study cardiovascular disease was strongly positively associated with 'attendance at parties', one of the 'lifestyle factors' of rising affluence which many epidemiologists regard widely as an important causative factor in coronary heart diseases. Starchy or carbohydrate-rich foods were strongly positively associated with pregnancy-related diseases, such as obesity and gestational diabetes. The foods that were listed as positively correlated were local dishes like *Jareesh*, *Gursan*, *Margoug*, and *Mahalabiyah*. No positive correlation was found, however, between food, dietary habits, and endocrine disorders. Negative correlations were found with corn oil, *laban* and sweets like candies, cakes between meals, sugar in tea and chocolates.

The seventh study was conducted by female students in the third year, Social Studies Department, King Saud University in (1993) and applied on the fourth year students. It was about "*Dietary habits and their relation to health awareness of university female students*". This study presented the following results: The university curricula did not have any impact on dietary habits of most female students, who also, did not take breakfast at home before coming to classes. The most popular meals were lunch and dinner while breakfast rarely mentioned. Snacks like sandwiches, biscuits, chocolates, soft drinks, tea and coffee were usually taken between meals. Among non-traditional foods the most popular were sandwiches, French fries, pizzas and hamburgers. Also, the food items mostly consumed by the students were kabsa, white bread,

meat, eggs, cheese, dates, vegetables and fruits, while traditional food items like *Margoug*, *Jarieesh*, *Henainy*, *Gursan*, *Harisah* and *Marasea* were not so popular. Besides that they used to have hot spices and hot sauces, because they add flavour to food. As far as the most popular methods of cooking the students mentioned that cooking in water was the most used, while grills and foods prepared by steam or microwave were fewer in number. Moreover, nearly all of the survey sample used vegetable oil and butter in their cooking. Most of the study sample expressed negative remarks about the university restaurant with regard to its standard of hygiene. As far as the main sources of nutritional information parents were considered the main sources, while medical books, newspaper, television and academic curricula had little impact on the students. Furthermore, food advertisements appeared to have negative aspects, according to the students' opinion. Finally, the study revealed that the level of nutritional and health awareness among the students was lower than it had been anticipated.

An eighth study was a dietary survey conducted by King Abdulaziz City for Science and Technology. (1995) The study showed the following results: Three meals were consumed daily with lunch being the main meal. Lunch consisted generally of rice, mixed vegetables, green salad and lamb or chicken. While breakfast consisted of eggs, cheese, *halawa*, olives, lamb and camel liver in addition to bread and tea. Dinner appeared to consist of rice, olives, cheese, yogurt, *laban* (butter milk), bread and *motabbag* (flour, onion, meat, egg, spices and salt) and some fruits. Eating between meals differed from region to region. It was practised more in Al-Madina and Taif where 55% and 56% of the sample practised it, while it was not popular in Tabuk area (in the north of the Kingdom) where 57%, stated it was unacceptable.

Fresh mutton was the most popular type of meat. 80% of the sample consumed it daily. Camel meat was preferred by the nomads and 20% of the sample consumed it at least 2-3 times a week. Fresh chicken was the second most commonly consumed meat with 40% of the sample consuming it at least 1-3 times a week. Egg consumption was quite high as more than 70% of individuals consumed them 2-7 times a week. Fish consumption was generally low, particularly inland 20% consumed it about 1-3 times a week. Milk and milk products were very popular with

60% of the sample consuming them daily. Fresh vegetable consumption was becoming more popular with 38% consuming it daily. Fruit consumption followed the same pattern; 40% consumed it daily. Date consumption was very frequent and popular, 53.8% consume them daily beside the main meal and 21.5% consumed them more than 7 times a day, as they are generally served with Arabian coffee. Honey was very popular and was consumed by about 50% of the sample 1-3 times a week. Sweets of various types were consumed by 30% of the sample more than 3 times a week. Tea and arabian coffee was consumed daily by 55.4%. Soft drinks were consumed by 42.9% 2-3 times a week. Food consumption of Saudis was estimated based on data collected throughout the country by 24 hour recall method. A detailed table containing more than 300 food items consumed in different regions of the country was presented with percentage of household families and quantities of each item. An itemized table of food consumption of Saudis per head, per day would help to understand Saudi dietary habits as shown in the following table:

Table 2-2 Items Consumed Per Head/ Per Day:

1	Cereals and products Wheat 200 gms Rice 159 gms	360 gms
2	Fresh milk	183 ml
3	Yogurt	144 ml
4	Cheese	26 gms
5	Chicken	123 gms
6	Red Meat	128 gms
7	Fish	28 gms
8	Legumes	63 gms
9	Vegetables	348 gms
10	Fruit	300 gms
11	Fruit Juice	100 ml
12	Tea and Coffee	2.5 cups
13	Sweets	72 gms

(K.A.C.S.T) 1995.

In relation to health issues the survey found that dietary practices of pregnant and lactating women did not change during this period among 50-70% of the respondents. Breast-feeding was practised by 63% of lactating mothers, while 16.4% practised mix-feeding, only 7.2% of the children were exclusively artificially fed. The most common communicable disease

among children is diarrhoea , as 47.4% of those examined had a history of diarrhoea at one time. The overall percentage of the respondents who showed signs of anaemia was 15.7% and 59.9% of the sample of the national average who consumed sweets daily may explain many dental problems occurring in particular and other health problems in general.

A ninth study was conducted by Al-Nuaim *et al.*, (1996) on a sample of 37,000 respondents in different regions in S.A. The objective of this study was to determine the common chronic metabolic diseases such as : Diabetes mellitus (DM) and obesity. The study found that: There is a high progressive increase in prevalence of (DM) which exceeded 25% in most regions. And urban areas were more risk for (DM) than rural ones. It is major risk factor for coronary heart disease, (CHD) and it is the leading cause for blindness and renal failure. Moreover, there is a high prevalence of overweight and obesity among Saudi people, particularly females. Obesity in SA is higher than other parts of the world. Also, there was a significant regional variation with respect to prevalence of over weight and obesity. These conditions were more prevalent among high income and illiterate who are living in urban communities. As the prevalence of obesity increases with age, considering that 60% of Saudi population are less than 30 years old, the prevalence of obesity is expected to multiply in the near future if no intervention programme is initiated. The study suggests that an intervention programme aiming to promote public awareness of health hazards of obesity and to encourage behaviour modification towards acquired nutritional habits and need for regular exercise practices. There is a need to address seriously means of primary prevention with emphasis on change of lifestyle and combating obesity and related problems. There is a need to establish regional comprehensive diabetes programme aiming for improving diabetes control, early detection and treatment of diabetes complication. (Al-Nuaim *et al.*, 1996: 547-52).

A tenth study was carried out in (1998) by Peter L. Pellett and Shibani Ghosih under the title "*Health Aspects of Middle Eastern Diets*". The study noted that the chronic, nutritionally related diseases have been major causes of death and disability in the rich industrialized countries. American and North European diets have tended to be high in animal foods (meat,

dairy, fish, eggs) and low in foods of plant origin (grains, legumes, fruits and vegetables). A change towards this dietary pattern has also, occurred over the last three decades in many Middle Eastern countries (Musaiger 1998a). Dietary patterns that are high in animal foods are usually also, high in saturated fat and cholesterol and low in fiber. Since only a small proportion of income is now required to be spent on food to meet nutritional needs in the more affluent countries (Waterlow 1989) many chronic diseases are the manifestation of the high availability and variety of foods leading to over-consumption (Garrow 1994). Some of the major nutritionally related chronic diseases such as obesity, hypertension and diabetes are increasingly common in the Middle East. Obesity is a major public health problem and affects many millions throughout North America, Europe and the Middle East. It is characterized by excess body fat caused by an imbalance between energy intake and energy expenditure (Pi-Sunyer 1994). Not only it is a problem in its own right, but it is closely linked to other diseases such as hypertension, diabetes and cardiovascular disease. Many long term studies have shown a greater risk of these diseases with increasing levels of obesity, even when other risk factors are present. The most successful strategies for weight loss include reduction of food energy intake, increased physical activity and behaviour therapy designed to improve eating and physical activity habits. Hypertension is a risk factor for both coronary heart disease and stroke. While it can occur in children and adolescents, it is more prevalent in the middle aged and elderly, especially the obese (American Heart Association 1998). Individuals with diabetes mellitus, gout or kidney disease also, have a higher frequency of hypertension. Excess salt consumption can increase blood pressure for some. High blood pressure is related to obesity and to increases in body weight over time. (American Heart Association 1998). Diabetes mellitus is a major public health problem worldwide. It ranks sixth as a primary cause of death in the United States, but when its complications are included it ranks third. Moreover, diabetes and heart disease in later life appear to be linked to weight at birth (Anderson, and Geil, 1994). Improper eating habits accompanied by the lack of exercise increase the risk of gaining excess weight, a major risk factor for heart disease, high blood pressure and diabetes. (Keys 1970:211). Diets high in fat particularly saturated fat, have

also, been associated with a higher incidence of cancer of the colon, prostate and breast (Truswell 1994:41). Increased consumption of fruits and vegetables has been recommended to reduce cancer risk as these foods contain protective factors. Diets high in plant foods, starches, fibre and various carotenes are commonly associated with a lower incidence of alimentary tract cancers. A number of dietary and non dietary factors have been found to decrease the incidence of various cancers. The affluent, define diets, and lifestyles closer to those common in the past for the poor. Furthermore, these latter societies, as their wealth increases often then emulate the diets and lifestyles of the West. In consequence, they are now increasingly subject to the same patterns of disease. See the following table:

Table 2-3: National Problems in the Arab Countries.

Problems.	Countries most affected.	Major underlying causes.
Undernutrition in general and PEM in infants and young children.	Sudan, Somalia and Yemen.	Food Scarcity Poverty High infection Lack of nutrition awareness Poor sanitation.
Maternal malnutrition.	Somalia, Sudan and Yemen.	Dietary inadequacy Early age at marriage Frequent pregnancies at short intervals High energy cost due to work during pregnancy Lack of maternal care.
Anemia (especially iron deficiency anemia).	All the countries.	Unsound food habits Low iron intake Low iron absorption Parasitic infestation Malaria Multiparity.
Iodine deficiency Disorders (IDD).	Egypt, Iraq, Lebanon, Libya , Sudan and Tunisia.	Low iodine in soil and food commonly consumed.
Vitamin A deficiency.	Sudan and Yemen.	Unsound food habits, low vitamin A intake infection.
Vitamin D deficiency.	Saudi Arabia, Yemen, Jordan (and may be in most countries especially among infants).	Use of unfortified food Lack of vitamin D in foods Lack of exposure to sunlight.
Diet-related chronic diseases: Cardiovascular disease, hypertension, diabetes, obesity, dental caries and some types of cancer.	Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, UAE, Tunisia, Jordan and Egypt. Sizeable proportion of population in urban areas is affect too, in other countries.	Excess intake of certain nutrients. Sedentary lifestyle Smoking Lack of physical activity High intake food rich in fat and sugar.

Miladi and Musaiger, 1998a: Food consumption patterns and nutrition situation in the Arab countries. *Bahrain Med Bull.* 20 (3) 83-6.

The eleventh study was conducted by Fahad Al-Onaizi in Riyadh (1998) concerning socio-economic factors of the spread of fast food restaurant. The study found that: men went to restaurants more than women did 81.3%, 18.7% respectively. Also, young people between the ages 20-30 went to restaurants more than those of 30 years and over 67.5%, 17.5% respectively. Moreover, students went to restaurants more than employees 53.8% and 32.5% who are University students, 61.3% followed by high school students, 17.5% those with a post high school diploma, 10%. Intermediate school students 6.3%. Graduate students 3.8%. The last was elementary school students 1.3%. Furthermore, single people went to restaurants more than married ones 63.8% and 36.3%. As far as eating outside one third of the study sample 31.3% began going to restaurants fifteen years ago and 26.3% of them began ten years ago. The food items mostly consumed by the survey sample were Shawurma sandwich was the first preferred 32.5%, while second was hamburger 27.5%. Third fast food 26.3% and last roasted chicken 13.3%. The preferred fast food restaurants was Kudu 15%. Pizza Hut, Herfy and Tazeg restaurants joint second each being chosen by 11.3% of the sample. Third was McDonald's 10% and other restaurants were chosen by 41.3%. Dinner was the preferred meal in restaurants 56.3% and second was snacks between meals 22.5%. Breakfast was third 13.8% while lunch was the least preferable meal to be taken in restaurants. 7.5%. The majority of respondents went to restaurants more than once a week 55%, a fifth went once a week 20%, 13.8% went once a month and 11.3% went more than once a month. Most respondents went to restaurants with their friends always 17.5%, and sometimes 71.3%, while only 10.3% went alone. Also two thirds of the respondents 66.3% agreed that fast food restaurants are widespread in Saudi society while 33.8% of them disagree. Furthermore, most respondents 86.3% thought that there has been a change in the Saudi diet after the spread of fast food restaurants. (1998: 29-40).

Conclusion:

This chapter has explored the many factors which influence food choice, such as: culture, ethnicity, religion, family, social relationship, age, gender, class, income, food fashions, mass-media, globalization of food and environment. These factors which influence diet, dietary habits

and practices in turn, therefore, have an impact on family health. Furthermore, as suggested by the studies discussed above there is a growing interest in the domain of health and nutrition among academics, health professionals and researchers in relation to S.A. with studies suggesting that there is a link between changes in diet and changing health patterns in S.A. But although this interest is still in its infancy, problems which are the result of malnutrition are conspicuous in all studies affirming the necessity of exploring the link between health and nutrition.

Chapter Three

RESEARCH DESIGN AND METHODOLOGY

Introduction:

In this chapter the methodological tools and procedures used in carrying out this study will be described. It covers the collection of data, types and nature of sampling, questionnaire design, usage of a Likert scale, and the method of statistical analysis. It is worth noting that all methods and techniques used in social research have their own particular advantages and disadvantages. Consequently, a particular method or technique is conditioned by the nature and characteristics of the topic or problem being studied. In investigating the effects of dietary habits on the health of the Saudi family, the social survey was chosen as a methodological approach, because it is the most suitable to approach the research subject. The use of a survey made possible, not only a description of the phenomenon of the study, but also, the analysis of the relationship between independent variables such as age, level of education, social and economic class and dependant variables such as dietary habits, health and nutritional awareness. Michael has noted that:

' the resulting data is usually analysed quantitatively to provide descriptive information about the variables studied and to search for associations or correlation's between two or more variables. The social survey as a methodological approach could provide a profound and accurate source of data. It is the most commonly used research technique in sociology, and is widely used in governmental , commercial and independent non-profit research' (Michael 1983:368)

The social survey as a research technique has the benefit of reaching a great number of respondents. One of its advantages, is that the researcher can obtain specific and detailed information about a wider spectrum of people in order to generalize findings from a very specifically select and limited segment of society.

A quantitative approach was applied allowing the researcher to look at the distribution patterns of factors across a large population and in this case to seek variables explaining why people eat certain foods and have certain dietary habits. Additionally it allowed explanation of the effect of the variables age, income education and gender may have. Quantitative data provides information about the population in numerical form. Also, it enables standardized objective

comparisons to be made, while measurements of quantitative research permit overall descriptions concerning situations or phenomena in a systematic and comparable way. Some of these points are offered very briefly by Punch (1999) as follows: 'quantitative data are information about the world in numerical form. They are necessarily structured in terms of the number system, and reflect researcher-imposed constructs' (1999:61)

The research sample in this study consists of 310 respondents randomly chosen. The size of sample and its random nature are of considerable importance in quantitative research. During the sampling process respondents were chosen equally from all four quarters of the city of Riyadh to represent about 2.5% of the total number of Saudi people in each. Additional secondary source materials, statistics and unpublished materials related to this study were also, collected from various sources to complement the sampling. The questionnaire was designed with a mixture of open and closed questions. The latter type enabled a large quantity of data to be collected in a comparable format to facilitate analysis, while the former allows respondents to express their own opinions about diet and dietary habits in relation to their health. Finally, at the end of the questionnaire 64 statements were included to assess respondents attitudes and opinions about Saudi family's health and dietary habits. Following this a brief account of the theoretical framework for quantitative research, a description of the actual study area is necessary to enable the research to be situated within its specific context.

Study area Description:¹

Riyadh, where the research was carried out, is located in the Central region of Saudi Arabia. All the ministries and the headquarters of the government institutions are located there. Also, two of the seven universities in the country are in Riyadh, along with four military academies, colleges for girls and several vocational and training institutions. The climate of Riyadh is hot and dry. The dominant features are high temperatures with wide differences

1- Some parts of this description reproduced from Al-Abdullatief study 1989 in pages 10, 209 – 13, because the conditions and the situation are still nearly the same

between day and night, low rainfall, intense solar radiation and light winds. The average temperature is 52° F in winter and 97° F in summer. The highest temperatures can reach 118° F in July and August and the lowest can be 36° F in January. Rainfall is very scanty and irregular. Some years can pass with little rainfall, while in other years heavy rainfall occurs in short bursts. Riyadh has witnessed a huge expansion in its population due to the migration of people who came to Riyadh looking for employment and a better way of life. The size of its population increased from 27,000 in 1930 to 2,723,222 in 1993. The number of non-Saudis living in the city was 973,079 persons and there were 440,389 houses in 1993. (Ministry of Planning 1995:16). By 1997, this number had increased to 3,116,800 persons of which 967,800 persons were non-Saudis, while the number of houses had increased to 467,469. (High Commission for the Development of Riyadh 1998:6). In 1999 the number was 4,000,000 person. (Al-Jazeera, No.9894, 31/10/1999:32) Most of the population is young as was found in this study and shown in the table below..

Table 3-1 Distribution of respondents by age.

Age Group.	Fr.	%
Less than 30 years	63	20.3
30-40	131	42.3
40-50	67	21.6
50-60	36	11.6
60 and over	13	4.2
Total	310	100

Age plays a significant role in food choice and dietary habits in any society, as it has been mentioned in chapter two. 62.6% of the study's sample were under the age of 40, which is of youthful nature. One can assume that this younger category might be of a strong tendency to go for fast food restaurants rather than traditional food. This assumption is similar to Al-Onaizi findings (1998) mentioned in Chapter Two. This trend might become an alarming sign for future generations health. Moreover, 63.9% of the study sample were between 30-50 years old. This large and older category can be considered as having the decision making in family food choice

and dietary habits. These people are inclined to abide to social eating habits which may put them under pressure to resort to exaggerate in their food consumption, specially in social and religious parties and occasions. These excessive food quantities may lead to negative health affects for the family. The above finding is similar to the UN-ESCWA's estimation. 'the 1998 population estimates show that the population of Saudi nationals has a very young age structure with 16% of the population aged under 5 years. 41% aged under 15 years and 40% between the age of 15-64, while only 3% aged 65 and over' (UN-ESCWA 1999). This population structure and age group can be seen as an important factor appearing to shape the population's health. This assumption holds for the population group in Saudi society where 57% of the population is under 15 years old. It should be understood that this population category is more likely to be susceptible to many malnutrition and other diseases comparable to a developing country, according to the WHO report 1998 mentioned in chapter one.

In 1920, Riyadh became the capital of Saudi Arabia while undergoing transformation from a small town to a relatively large modern one. It has passed through two periods. Doxiadis and Associate's study 1968, as the first comprehensive study about the city of Riyadh gave some historical development of the city of Riyadh as follows: 'The first period started in 1920 and ended in 1940. The second period started in the early 1950s and continues to the present time. While the city has witnessed expansion during these two periods, the pace of expansion has obviously been different. It was slow during the first period and fast in the second one' (:16) In¹ the first period, when King Abdulaziz united the country and made Riyadh his Kingdom's capital, after achieving political and social stability, efforts were made towards increasing urban development. However, lack of money and modern technology crippled efforts to expand the infrastructure of the city on a large scale. In the second stage, the growth of the city has by contrast, been explosive and rapid.

1- The following 16 lines about the historical description of the city of Riyadh is based on Al-Abdullatief's study (1989: 11-12).

This period brought ten times as much urban growth as Riyadh had experienced in its entire history. Expansion of the city to its present level has been enhanced by affluence resulting from oil revenues and by the utilization of modern technology as described in previous chapters. Riyadh not only grew in size, but important new elements were added to the urban landscape which set patterns of development. The most important features were new housing types, such as apartments, and new construction materials of reinforced concrete and cement. The old city centre buildings were demolished for new roads and shops, offices and flat buildings. Many new schools, hospitals providing services and community amenities, governmental buildings and dwellings for government employees were built. The rapidity of development in Riyadh makes it difficult to compare today's city with the Riyadh of just thirty years ago. In 1970 people lived no more than 10 km from the city centre. The city now stretches over a vast area of hills and lands that were considered to be uninhabitable a few years ago (see Figure 3-1). So that by 1991, Riyadh had an area of 1,782 km² (High Commission for the Development of Riyadh 1998:40)

Riyadh was therefore, chosen as the study area because it is a melting pot for people from all over the country, where opportunities for education and employment are available along with more advanced facilities and services. People tend to migrate to Riyadh from nomadic and rural areas, as well as from other cities and towns in the country. Also, it is already diversified into discrete economic areas. In addition Riyadh has selected because it is the capital and has important functions as a political, administrative, cultural, commercial, financial and transportation centre for the whole country and for the central region in particular.

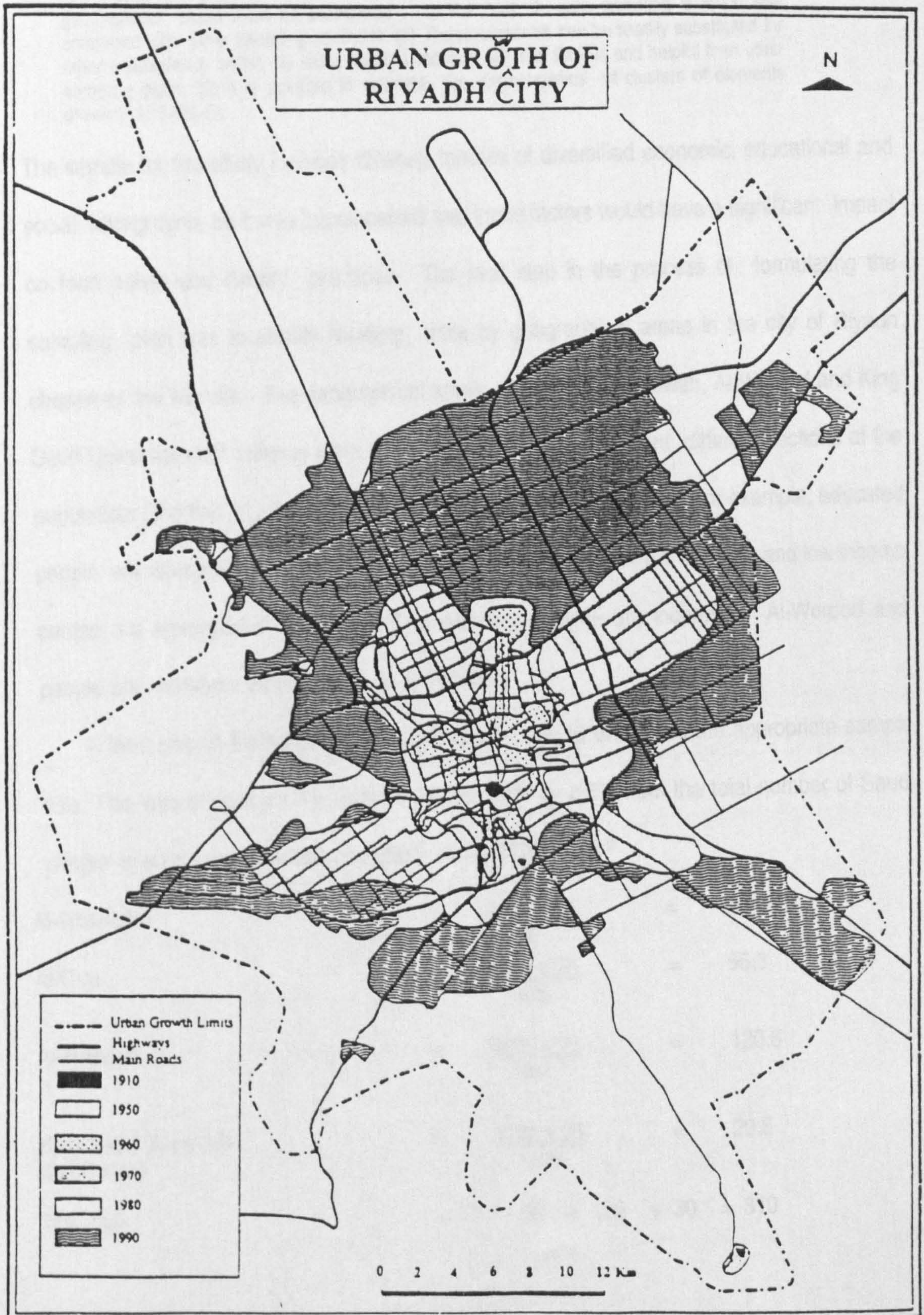
Sampling:

The objective of any sampling plan is to establish procedures for the selection of survey samples in order to provide sufficient data for statistical validity. The sample for this study was selected for a random stratified sample to give sufficient numbers of the population an equal chance of being included in the study area. The type of sampling is a multi-stage sample

cluster. In cluster sampling one arrives at the ultimate set of elements to be included in the sample by first sampling in terms of larger groupings (clusters).

'the clusters are selected by simple or stratified random sampling methods; and if not all the elements in these clusters are to be included in the sample, the ultimate selection from within the cluster is also carried out on a simple or stratified random sampling basis. For example a survey of urban households may take a sample of cities; within each city that is selected, a sample of districts, within each selected district, a sample of household. Characteristically, the procedure moves through a series of stages hence the common term 'multi-stage' sampling-from more inclusive to less inclusive sampling units until one arrives at the population elements that constitute the desired sample'(Selltiz *et al.*, 1959:533-34).

Figure (3-1):



Source: Based on map by High Commission for Riyadh Development
Re-Produced by : Salahuddin Turki , Dept. of Geography, King Saud
University, 2000.

The cluster sample was used in this study due to the fact that it has many advantages, which had been put forward by Black and Champion as follows:

' (1) area sampling is much easier to apply when large population are studied or when large geographical areas must be canvassed . (2) The cost of area sampling is much less compared with other sampling methods. (3) The respondents can be readily substituted for other respondents within the same random section . (4) It is flexible and helpful than other sampling plans. (5) It is possible to estimate the characteristics of clusters of elements drawn' (1976:295-6).

The sample for this study includes different families of diversified economic, educational and social background, as it was hypothesized that these factors would have a significant impact on food habits and dietary practices. The next step in the process of formulating the sampling plan was to stratify dwelling units by geographical areas in the city of Riyadh chosen as the key site. The geographical areas of Al-Oud, Al-Rabwah, Al-Worood and King Saud University staff campus were chosen because they represent different sections of the population. One can say that each quarter has its own characteristics. For example, educated people are represented in King Saud University staff campus, whilst illiterate and low income people are represented in Al-Oud. The well-to-do people are located in Al-Worood and people with moderate incomes live in Al-Rabwah.

A third step in formulating the sampling plan was to determine the appropriate sample size. This was chosen on the basis of 25 per 1000 or 2.5% from the total number of Saudi people in each quarter as follows: (2812, 3414, 4825,1192) ¹

Al-Worood	=	$\frac{2812 \times 25}{1000}$	=	70.3
Al-Oud	=	$\frac{3414 \times 25}{1000}$	=	85.3
Al-Rabwah	=	$\frac{4825 \times 25}{1000}$	=	120.6
King Saud University Staff Campus	=	$\frac{1192 \times 25}{1000}$	=	29.8
The total	=	72 + 86 + 122 + 30	=	310

1- Ministry of Planning, Central Department of Statistics 1998 : 2.

Each quarter of the study's four quarters is divided to a number of streets according to the study required sample size. In the meantime, from each street six respondents were chosen randomly. And in a more detailed description of how the study sample had been chosen is as in the following: for instance, 84 respondents from Al-Worood quarter were chosen from 14 streets where 6 respondents were drawn from each street. Similarly Al-Oud quarter sample were 102 respondents who were taken from 17 streets. And from each street 6 respondents were chosen. In the Al-Rabwah quarter, it was the same case, where the respondents were 144 who were drawn from 24 streets. And the required sample were 6 respondents from each street. King Saud University Staff campus is the last quarter, which had 36 respondents who were chosen from 6 streets. The summary numbers were put below:

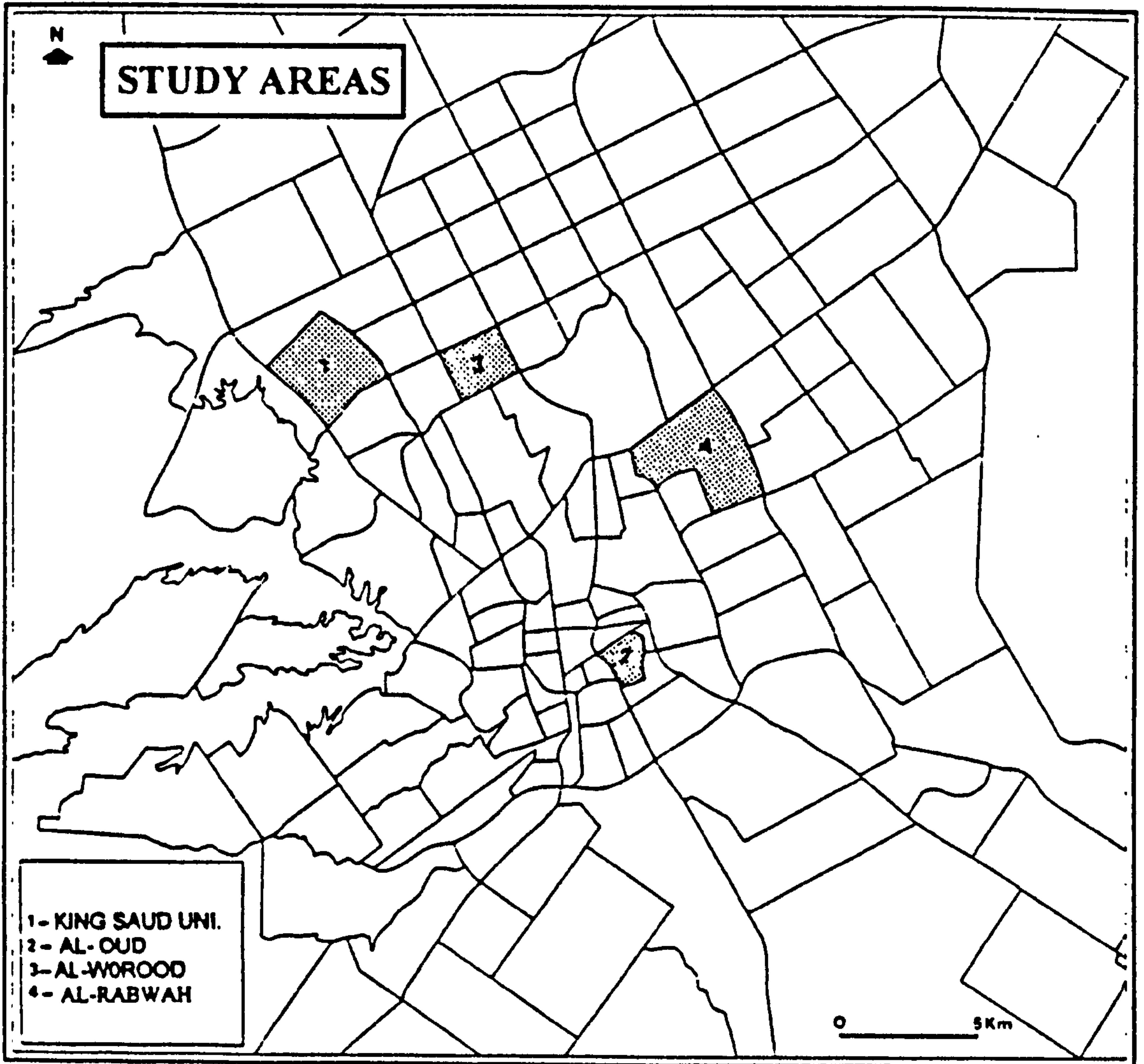
Al-Worood	=	84 ÷ 6	=	14
Al-Oud	=	102 ÷ 6	=	17
Al-Rabwah	=	144 ÷ 6	=	24
King Saud University Staff campus	=	36 ÷ 6	=	6
The total	=	84 + 102 + 144 + 36	=	366

The total number of questionnaires distributed was 366, having in mind that some of them might not be completed. In actual fact 56 returned questionnaires were disregarded and rejected because they were incomplete. In total, 310 final questionnaires were completed and used as the study sample in all four quarters to include educated, illiterate, high and low income families.

The four residential areas in the city of Riyadh are shown in (Figure 3-2). In this study the researcher used the same quarters' characteristics of her previous study (1989) as follows:

'they were selected on the basis of education and income standards of the local population, the type of housing, street patterns and location within the city. The objective was to include old and modern residential areas, comprising different population groups, to achieve a cross-section of the population. It was hypothesized that this would provide a context within which to explore variation among the city population's health and dietary conditions by facilitating comparisons between these localities in terms of their social, economic and physical characteristics' (: 18)

Table 3-2 is meant to show the study quarters space usage which might contribute to making different affects on people's activities in general and their health condition in particular.



Source: Dept. of Geography, King Saud University, 2000.

Figure (3-2):

Table 3-2 Types of space usages /per units in the four quarters.

Quarters	Residential	Manufacturing	Transport, Communication & Utilities	Trade	Services	Cultural Entertainment & Extraction	Resources of Production & Extraction	Vacant & Unoccupied	Total	
Al-Worood	Fa	2385	5	205	485	457	25	0	384	3946
	%	11.13	0.02	0.96	2.26	2.13	0.12	0.00	1.79	18.42
Al-Oud	Fa	5010	10	60	637	340	2	0	1369	7428
	%	23.39	0.05	0.28	2.97	1.59	0.01	0.00	6.39	34.67
King Saud University Campus	Fa	1008	1	102	11	97	36	20	48	1323
	%	4.71	0.00	0.48	0.05	0.45	0.17	0.09	0.22	6.18
Al-Rabwah	Fa	5235	17	347	984	867	32	0	1244	8726
	%	24.44	0.08	1.62	4.59	0.15	0.15	0.00	5.81	40.73-
Total		13638	33	714	2117	1761	95	20	3045	21423
		63.66	0.15	3.33	9.88	8.22	0.44	0.09	14.21	1000

High Commission for the Development of Riyadh. 1998: 2.

The following is a very brief description of the four quarters of the study:

King Saud University Staff Campus:

This is a modern residential area, built in 1978 located about 16 kilometres to the north-west of the city centre. It contains 45 buildings with 770 flats and 400 villas, and is occupied by people with high levels of education. The campus is a homogeneous community as far as educational achievements and income are concerned. All the residents are King Saud University's teaching staff. The streets are always clean and dry; there are very few flies and insects. There is also, a lot of green land and clean playground areas between buildings for children. The buildings consist of three or four floors. Each floor has four flats. The allocation of flats depends on family size with a one bedroom flat for a married couple, two bedrooms for families with two or three children, and three bedrooms for a family with four children or more. Each flat has one toilet and bathroom. Ventilation in these flats is good, but light is less than adequate. In general most of the flats and villas are very clean and have adequate washing facilities and clean toilets. As a result, there are no flies inside. The furniture is proof of the increasing influence of western consumer models. Sitting rooms are furnished with couches and armchairs. The men no longer sit on the floor as in the old (*majlis*) sitting room. A desk or a glass fronted bookshelf in a corner bears witness to the host's cultural level. Dining rooms are furnished with a high table and chairs. Bedrooms resemble those of Europeans, containing a large bed with a wooden bedstead, two bedside tables with lights and a large fitted wardrobe. The 400 unfurnished villas were built on two floors. They are of three sizes: big with 5 bedrooms, medium with 4 bedrooms and the small size has 3 bedrooms. In addition to that, each villa was built deliberately with two separate bedroom one for the housemaid and the other for the driver.

Al-Oud Quarter:

This quarter is the nearest to the city centre, about 3 kilometres south-east of the city centre. The most conspicuous feature of this area is that most of the houses are built of mud largely due to the age of this quarter. It is one of the old quarters of the city, an area of cul-de-sacs, dead ends and narrow streets. The quarter's population are of low educational

achievement as well as low income people. Most of these houses are small, with inadequate ventilation and few windows. Houses in this quarter are almost all of the same style.

Table 3-3 Distribution of respondents and house types in Al-Oud quarter.

Kind of House	Fr.	%
Flat	33	38.4
Floor in house	10	11.6
Mud House	41	47.7
Villa	1	1.2
Palace	0	0.0
No reply	1	1.1
Total	86	100

The survey results summarized in table 3-3 show that the majority of respondents, 47.7%, in this quarter were living in mud houses and only 1.2% lived in a Villa. In most of these houses, the bedroom furniture consists of very simple items such as rugs and mats covered with blankets. Proper beds are very rare in these houses. In general most furniture in the houses is old and dilapidated. In addition to insanitary conditions of these houses, most of them are overcrowded. Also, these houses are only moderately clean. Some of them have rubbish inside the rooms, inadequate cooking and washing facilities and dirty toilets, with a lot of cockroaches inside. Moreover, the main doors are kept open most of the time allowing flies and mosquitoes to enter the houses. Flies can be seen settling on the food, in spite of the fact that many people use insecticide. It is the lack of cleanliness which helps the spread of flies and mosquitoes¹. The only villa in this quarter seems to be cleaner providing better health conditions than mud houses. In addition to that, extra space distribution around the villa is visible.

Al-Rabwah Quarter:

This is a modern residential area located about 10 kilometres to the north-east of the city centre, and is occupied by middle income people. Houses in this quarter are the same as in Al-Worood quarter.

¹-There is an urgent need for mass health awareness concerning public hygiene, which remains to be provided. Housing is the concrete expression of the family and other social institutions of the whole society and it has its effects on the family's health. Good housing has long been recognized as an indispensable condition of healthy living.

Al-Worood Quarter:

This is a modern residential area and is located about 12 kilometers north of the city centre, and is occupied by high-income people. The type of housing in Al-Rabwah and Al-Worood is mostly villas, (as shown in table 3-4) and is based on western styles and designs. However, while the villa materials are changing, the interior of the villas tends to remain distinctively Saudi. For example, each house has two sections, one for women and the other for men. All houses have two entrances, one for men and their guests, the other for women. Comfortable houses often have two rooms: the living room or (*Majlis*) and the dining room or (*Mogalt*), plus a toilet in the men's section, and the same in the women's section. The house centres on a big garden. Most villas are new and made of modern materials, cement covered cinder block walls, roofing slabs based on modern techniques and tiled floors. These materials are obviously sturdier and cleaner than clay, but these villas are cold in winter and very hot in summer. Air conditioning becomes a necessity. This entails the consumption of large amounts of electricity and water, and as water is quite scarce, this should not be wasted. Ventilation in the villas, on the whole, is a major step forward from the old houses where windows were very few or small. To protect occupants' privacy, the curtains are almost always drawn. The use of gardens is limited because people in the garden are often visible from upper storeys and rooftops of nearby houses. The furniture, a proof of the increasing influence of western consumer models, is very different from former patterns of consumption. Living rooms are now furnished with couches, armchairs, and low tables for glasses, covered with laminated plastic. The dining rooms are furnished either with a high table and chairs or only with a carpet or sometimes a china cupboard. Bedrooms contain a large bed with a wooden bedstead and two bedside tables, a large cabinet, a dressing table and matching chairs. The isolation of the houses in this area has meant a break in the strong social ties that women of a given agnatic neighbourhood traditionally had, when they were drawn together by the traditional housing

pattern. Women can therefore, no longer count on mutual help in the supervision of their children during sickness and for various other family events.

Table 3-4 distribution of respondents and house types in Al-Worood quarter.

Kind of Houses	Fr.	%
Flat	8	11.1
Floor in house	4	5.6
Mud House	0	0.0
Villa	60	83.3
Palace	0	0.0
Total	72	100

The type of housing naturally depends on the wealth of the individual people in Al-Worood living in the area and in general increased income and improved economic conditions, along with availability of building materials, have enabled people in this quarter to build modern homes with modern facilities and services.¹ (See table 3-4)

The economy of any society is a dominant factor that plays an essential role in its population activities. Individual or households vary in their income levels which has an effect on their lifestyle, and one can anticipate as well that family income might have an effect on diet, dietary habits and practices. From this assertion we look at the survey respondents and their level of income considering how they may differ from each other. Tables 3-5, 3-6, 3-7 and 3-8 show the pattern of household income in the four quarters in Riyadh.

Table 3-5 Distribution of respondents by level of income in Al-Oud quarter.

Level of Income	Fr.	%
Less than 3000 SR.	69	80.2
3000 - 6000	8	9.3
6000 - 9000	5	5.8
9000 - 12000	0	0.0
More than 12,000 SR.	1	1.2
No reply	3	3.5
Total	86	100

It is clear from this table that the majority of respondents, 80.2%, were in the low² income bracket with a family income of less than 3000 Riyals monthly. And 15.1% had medium income,

1-Living in mud houses as in Al-Oud quarter with its insufficient proper air, sun light, and healthy environment, might contribute to the deterioration of people's health. In villas found in the other quarters healthy living conditions are more available than in mud houses.

2-Low income category in this study is those respondents who have monthly income less than 3000 SR.

-Medium income category is the respondents who have a monthly income between 3000-9000 SR.

-High income which is more than 9000 SR.

while only 1.2% had high income. Low income may have effects on these people's diet and other health conditions.

Table 3-6 Distribution of respondents by level of income in Al-Worood quarter.

Level of Income	Fr.	%
Less than 3000 Saudi Riyals	1	1.4
3000 - 6000	7	9.7
6000 - 9000	16	22.2
9000 - 12000	15	20.8
More than 12,000 SR.	33	45.8
Total	72	100

Table 3-6 indicates that the majority of respondents, 45.8%, had a high income with more than 12,000 Riyals monthly. Only 1.4% of the respondents in Al-Worood had an income of less than 3000 Riyals monthly.

Table 3-7 Distribution of respondents by level of income in Al-Rabwah quarter.

Level of Income	Fr.	%
Less than 3000 SR.	9	7.4
3000 - 6000	16	13.1
6000 - 9000	26	21.3
9000 - 12000	26	21.3
More than 12,000 SR.	45	36.9
Total	122	100

This table shows that the high income group is largest, 36.9%, while the low income group numbered only 7.4% of the respondents in this quarter.

Table 3-8 Distribution of respondents by level of income in King Saud University Staff Campus.

Level of Income	Fr.	%
Less than 3000 SR.	0	0.0
3000 - 6000	0	0.0
6000 - 9000	4	13.3
9000 - 12000	15	50
More than 12,000 SR.	11	36.7
Total	30	100

Table 3-8 shows that there were no respondents with a low level of income, in this quarter 36.7% having a high income of more than 12,000 SR.

When we compare the four quarters with regard to income, there is a significant variation between them. By looking at tables 3-5, 3-6, 3-7 and 3-8 it is clear that the upper income group, those with more than 12,000 Riyals, are highly concentrated in Al-Worood 45.8% and to a lesser degree in Al-Rabwah 36.9% and King Saud University Staff Campus 36.7%, while in Al-Oud it was only 1.2%. It is evident that there is significant statistical differences between these quarters as far as high income is concerned. But when we look at percentages of low income less than 3000 SR that the highest percentage is 80.2% in Al-Oud, with percentages in Al-Warood and Al-Rabwah very low, 1.4% and 7.4% respectively. And there is no family with less than 3000 SR. in King Saud University Staff Campus. These significant differences as far as the low income is concerned, may have negative effects on family's health condition in Al-Oud quarter. Low income groups, who have very limited opportunities for socio-economic improvement, tend to be older and unqualified people. That is why the Government provides them with financial assistance to alleviate their poor housing conditions.

Table 3-9 Distribution of respondents and type of housing in Al-Oud Quarter.

Type of Housing	Fr.	%
Owned	29	33.7
Rented	51	59.3
Owned by the Government	6	7
Total	86	100

Table 3-9 indicates that the majority of respondents in Al-Oud were living in rented houses, 59.3%, while those who owned their houses represent 33.7%. Only 7% of the respondents were living in houses owned by the government.

Table 3-10 Distribution of the respondents and type of housing in Al-Worood Quarter

Type of housing	Fr.	%
Owned	50	69.4
Rented	20	27.8
Owned by the Government	2	2.8
Total	72	100

This table shows that most respondents in Al-Worood own their houses, 69.4%, and 27.2% live in rented houses, while only 2.8% of the respondents live in houses owned by the government.

Table 3-11 Distribution of respondents according to the type of housing in Al-Rabwah Quarter.

Type of housing	Fr.	%
Owned	86	70.5
Rented	35	28.7
Owned by the Government	1	.8
Total	122	100

The data in table 3-11 show that the majority of respondents, 70.5%, owned their houses, and only 28.7% people live in rented houses. Just .8% of the respondents lived in a house owned by the government.

The level of income and house ownership can be considered as an indication of wealth of the respondents. When we compare income levels and house ownership in three quarters of the study, Al-Worood, Al-Rabwah and Al-Oud. The percentage of owner occupiers is high in the first two quarters as their incomes are high. While in the third quarter Al-Oud was low, as shown in tables 3-9, 3-10 and 3-11.

Table 3-12 Distribution of respondents and the type of possession.

Type of Possession	Fr.	%
Owned	165	53.2
Rented	124	40.0
Owned by the Government	20	6.5
Other	1	.3
Total	310	100

This table indicates that the majority of respondents, 53.2%, owned their houses. The next group, 40%, were renting their houses, only 6.5% of the respondents were living in houses owned by the Government.

Table 3-13 Distribution of respondents according to the sources of family income.

Sources of Family Income¹					
Husband	Fr.	%	Wife	Fr.	%
Employment	137	88.4	Employment	38	24.5
Business	28	18.1	Business	4	2.6
Social Security	4	2.6	Social Security	4	2.6
Retirement	10	6.5	Retirement	1	.6
			Housewife	108	69.7

The survey results summarized in table 3-13 show that the majority of male respondents, 88.4%, were employees. Only 24.5% of female were employees, while 69.7% were housewives. In Saudi society women's jobs opportunities are restricted to certain culturally acceptable areas, and limited to specific jobs. For example, teaching at girls' schools, as doctors (treating women) in hospitals or providing social services to families and women in the community. There are very few and limited opportunities for women in business, as shown in the above table. Only 2.6% of wives were in business. Women cannot work in jobs which give them direct contact with men. However, working outside the home is seen as providing an activity that is of great importance at the present time to Saudi families. Women's involvement in work is seen as an opportunity to earn money to contribute to family and country's development while occupying their leisure time. ²Meanwhile, having an earning job is not obligatory for women in Saudi society, since the husband is regarded as the one who is responsible for earning the living and supporting the family financially. Only eight respondents, 2.6%, reported that they were living on social security benefits, and this group receives financial assistance from government through the social security office in Riyadh. It appears that family level of income could also, be responsible in shaping and determining family food choice and dietary habits. High-income families can afford to buy different types of food with regard to quality and quantity. Not only that, but also, they can acquire the latest healthy foods. One would expect their tables to be of plenitude with a variety of

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- 1- It should be noticed that people may have more than one source of income. The % will be over 100%
 - 2- The employment of foreign workers (housemaids and drivers) in Saudi households has become a real necessity as a result 61.6% of the study sample acknowledged that women's work is one of the main reasons for employing foreigners in the home, as shown in table 5-9

food. But, if one looks to the health and dietary situation in the low income bracket it could be another story. Their economic means limit what they can buy and resort to buying very cheap and canned food or food limited in variety. As has been explored in Chapter Two. This situation, may lead to deficiencies in nutritional health needs.

Employment of foreign workers (housemaids, nannies, chauffeurs and cooks) could also, be interpreted as a sign of affluence. This fact can be seen in tables 3-14, 3-15, 3-16 and 3-17 where Al-Oud quarter had the lowest proportion of respondents employing foreign domestic help.

Table 3-14 : Distribution of respondents and family employing foreign workers in Al-Oud Quarter.

Does the family employ foreign workers?	Fr.	%
Yes	19	22.1
No	65	75.6
No Reply	2	2.3
Total	86	100

This table shows that the majority of respondents, 75.6%, did not employ foreign workers at home. Only 22.1% of the survey sample did so.

Table 3-15: Distribution of respondents according to family employing foreign workers in Al-Worood Quarter.

Does the family employ foreign workers?	Fr.	%
Yes	64	88.9
No	8	11.1
Total	72	100

It is clear from this table that more than two thirds of the respondents, 88.9%, employed foreign workers in their homes, and only a few, 11.1%, did not do so.

Table 3-16: Distribution of respondents according to family employing foreign workers in Al-Rabwah Quarter.

Does the family employ foreign workers?	Fr.	%
Yes	97	79.5
No	24	19.7
No Reply	1	.8
Total	122	100

Table 3-16 shows that more than two thirds of the respondents, 79.5%, had foreign workers in their homes, while 19.7% did not.

Table 3-17: Distribution of respondents according to family employing foreign workers in King Saud University Campus.

Does the family employ foreign workers?	Fr.	%
Yes	29	96.7
No	1	3.3
Total	30	100

Table 3-17 illustrates that nearly all respondents 96.7%, employed foreign workers in their homes, while only a very few 3.3%, did not do so.

When we compare the three quarters Al-Worood, Al-Rabwah, and King Saud University Campus with Al-Oud Quarter in regard to having foreign workers in their houses, there is a significant variation between them. The percentages are significantly high in Al-Worood. Al-Rabwah and King Saud University Staff Campus 88.9%, 79.5% and 96.7% respectively, while in Al-Oud the percentage is 22.1%. These variations can be explained by the fact that the low income group may not be able to afford to employ foreign workers in their houses. But from the health point of view, it could be seen as an alarming sign because the presence of foreign workers, especially housemaids and drivers in the Saudi family, became a reality only within the last twenty years. Hamdan in his study (1989) emphasizes this point 'the presence of foreign workers at home is widespread among Saudi families at the present time' (1989:182) Not only that, but also, one has to take an account that many illiterate housemaids lack health and nutritional knowledge and hygienic methods in preparing and cooking the family's food which may have negative health affect on the family. In addition to that, many Saudi young girls are now not keen to learn how to cook, because many of them are dependant on housemaids in family cooking. And Saudi women may have become more dependant on housemaids in carrying out many of their household duties, helping to increase obesity among Saudi women through lack of exercise as it has been treated in detail in Chapter One.

Research Instrument:

The main method of data collection was the questionnaire enabling information to be gathered via a systematic, and purposely designed list of questions. The questionnaire technique as a means of collecting first hand data and materials about a specific section of the society was used in this study to compensate for the lack of primary information about dietary habits in Saudi Arabia. Questionnaires can provide large scale detailed personal data that might not be obtainable otherwise. Furthermore, the questionnaire is commonly used by sociologists, social anthropologists and other social scientists, being a technique which is becoming increasingly more important. Al-Salem and Al-Forah, indicate that:

'a questionnaire has the advantage of enabling the accumulation of an independent body of data specifically designed to answer the questions that underline the structure of research project, compatibility of responses and facilitate the researcher's job to study and generalize his/her findings on a large population. Also, it helps to preserve the privacy of respondents. . They may answer any question without feeling embarrassed because there is no person watching him/her while he/she is answering the questionnaire, as in the case in personal interview techniques' (1979:69) .

Moreover, it enables a large sample of any population to be reached with low cost in a short period of time and in fact is often simply mailed or handed to respondents with a minimum of explanation. The questionnaire also, allows the pooling of knowledge in answering questions. Another advantage of questionnaires is that respondents may have greater confidence in their anonymity, and thus feel free to express views they fear might be disapproved of or might get them into trouble. If a questionnaire is presented as anonymous and there is no apparent identifying of information, the respondent may feel greater confidence that his/her replies will not (or cannot) be identified as coming from him/her. This technique appears to be more useful and constructive than face to face techniques. Sellitiz *et al.*, indicated that:

'questionnaire may place less pressure on the subject for immediate response. When the subject is given ample time for filling out the questionnaire, he/she can consider each point carefully rather than replying with the first thought that comes to the mind, as often happens under the social pressure of long silences in an interview' (Sellitiz *et al.*, 1959: 238-41).

The questionnaire used in this study (Appendix C) contained both open and closed questions which were designed to facilitate subsequent data processing by computer. The first step in the formulation of the survey questionnaire was to identify the general subjects to be

addressed and the specific data to be collected and tabulated. ¹The questionnaire contained variables regarding socio-economic and cultural characteristics consisting of four parts. Parts one and two were concerned with obtaining background data about the respondents. The socio-economic characteristics employed as independent variables were: age, level of education, income, type of occupation and the number and age of children in the family. The survey questionnaire included multiple choice questions designed to elicit information about these variables. Possible responses to questions about families' incomes range from 1 (earnings of less than 3,000 SR) to 5 (earnings over 12,000 SR monthly). For individual educational attainment, possible responses range from 1 (illiterate) to 6 (higher education). Questions about the number of children range from 1 (one child) to 6 (over six children). Individual age groups range from 1 (less than 30 years) to 5 (61 years and over). Occupational options include 1 (employment), 2 (business), 3 (Social Security), and 4 (Retirement). Part three of the questionnaire dealt with health knowledge and the effect of mass-media on health and dietary awareness. The fourth part dealt with respondents' health attitudes, and opinions where 64 statements were used. Ranking items in these statements were scored on a Likert –type scale with five categories ranging from 1= of little importance to 5 = of great importance. The Likert scale was used to measure attitudes toward dietary habits and their effects on health. This scale was used because it is a reliable method as well as relatively easy to construct, interpret and administer. Also it is the most common measurement format in social research. Questions in the first three parts of the questionnaire were formulated as multiple choice: that is, they provided a number of answers from which the subject was asked to choose the one that best describes his/her view. Also, the questionnaire contained open questions for respondents to put down their own answers to allow more complete coverage of topics in which the researcher was interested. The questionnaire was designed and written in English then translated into Arabic, the native

¹-The description of the first part of this study questionnaire is similar to somehow to that of researcher previous study questionnaire (1989) as cited in page 35.

language of Saudi people to make it easier for respondents to answer the questionnaire. It was distributed to 12 specialists in the field of sociology as well as in medical circles to obtain their opinions and advice which were very helpful. The next step was testing for reliability. The questionnaire was tested on 10 selected subjects before it was used as the pilot study to be sure of its clarity and respondents' ability to understand it.

Data Collection Procedure:

The following step was the main source for data collection. Fieldwork on which the study is based was carried out between October 1998 and April 1999. The survey questionnaires were distributed to respondents with a brief explanation about the purpose and importance of the survey emphasizing the importance of their cooperation. The respondents were promised confidentiality about the information they provided in order to ensure that the interviewed would not be reluctant or hesitate to respond. The major problem experienced was that of gender, since a female researcher can not interview men, because of the strict segregation between males and females in Saudi society. This obstacle was overcome by enlisting the assistance of the researcher's husband, for instance, when contact with male respondents was necessary. The questionnaires were distributed to the respondents who were literate, and willing to complete it. In the case of respondents who were illiterate the researcher and her husband read the questions to them and wrote down their responses. Each interview took two hours on average to complete. In general, the older respondents took longer than average. The researcher did not neglect field observation wherever possible. This enabled her to discover factors relating to the interviews, diet and dietary habits, way of behaving, attitudes and so on. The researcher and her husband let the interviewee present his/her ideas without interruption, and many useful comments were recorded separately. The questionnaire formed the main source of data collection in this study but was administered by 30 semi-structured interviews in Al-Oud quarter where those people are illiterate and were unable to fill in the questionnaire and also, by simple observations based on the researcher's own knowledge of Saudi Arabia as a

member of that society. It should be noted that children did not form part of the sample. Any data referred to later concerning children's eating habits were provided by their parents.

Statistical Analysis:

Following collection, the answers were checked thoroughly and some questionnaires had to be excluded from the sample, as incomplete. The 310 questionnaires were coded and fed into the King Saud University computer. The researcher used the statistical package for the social sciences programme, SPSS, which was utilized in all steps concerning data processing, cross-tabulation and analysis. It was used as the most suitable and comprehensive tool for managing analysis and displaying data. Its advantages has been put forward quite clearly by Rose and Sullivan who state that: ' the statistical SPSS package is probably the most widely used for the social sciences for managing and analysing large-scale data-sets' (1993:233). Moreover, they note that 'it provides a range of facilities, including tabulation, multivariate analysis and virtually all tests of statistical significance appropriate for sample survey data' (1993:250) . It is not only Rose and Sullivan who are enthusiastic about the multiple functions and usefulness of the SPSS package for social sciences, but also, Punch who is keen to appreciate the SPSS's advantages in a broader functional spectrum. As he put it, ' SPSS is one of the most popular statistical packages, and can perform highly complex data manipulation and analysis with simple instructions. SPSS has a vast number of statistical and mathematical functions, scores of statistical procedures, and a very flexible data handling capability. It can read data in almost any format such as numeric, dollar, date, time etc' (Punch 1999: 134-5). In this study frequency analysis and cross-tabulation were used. Also, the researcher used chi-square in statistical analysis as an appropriate test for significant differences between groups. It was applied to each quarter of the study areas separately, because, it has the advantage of investigating the significance of association between variables and is the most commonly used test for such a purpose in social research. Discussing briefly the methodological and statistical analysis in this study from a theoretical point of view is useful; however, when these

methods were applied in practice, some obstacles arose, which it is worthwhile to expose briefly.

Obstacles:

In the realm of social sciences research in general and in sociology and anthropology in particular, it is to be expected that the researcher will encounter various obstacles and hardships. This generalization is true in the developed societies and, the problems tend to be even more severe in developing societies. It was therefore, anticipated that the researcher would encounter certain obstacles and hindrances, particularly as a female researcher in a gender segregated society where women's unaccompanied movements outside the house are very restricted to few limited places and areas. The restriction is eased if she is accompanied by her very close male relatives. Moreover, societal expectation and anticipation of woman's engagement in social field work is still very limited. Partly this is because many people believe this kind of activity should be carried out by males rather than females. It is difficult to list all the difficulties and obstacles which were encountered during the research work, but, it is appropriate to shed light on some. The first one was the inability to collect in person, data materials and statistics from ministries, governmental agencies and bodies since these are staffed by men. The researcher's husband therefore, had to go to these offices and agencies with letters of introduction and authorization. The second obstacle was the shortage of references for scientific research and social studies in the field of this study. Rigid bureaucratic rules and regulations in some governmental agencies hindered the work unimaginably, which can be seen as the third obstacle. Not only that, but also, the strict social Saudi rules and regulations which deal with women's affairs do not take into consideration the particularity of Saudi women's circumstances and situation, so that this kind of acute situation was a fourth obstacle encountered all the way through the study. The fifth obstacle, which in reality was the hardest and most difficult task to accomplish, was gaining access to the field, especially going to 310 respondents in four quarters in the city of Riyadh. In such a conservative society as Saudi Arabia a female researcher certainly cannot carry out her

work alone. Women are not allowed to drive, so transport is a problem, nor can a woman interview men. For this reason the researcher had to be accompanied by her husband on all field visits. He conducted interviews with men while she interviewed women. The sixth obstacle still facing female researchers in Saudi Arabia is to convince potential respondents from different socio-economic backgrounds about the seriousness and benefits of the study to the community. This was a painstaking task. In this difficult situation the researcher accomplished some convincing steps in order to gain respondents trust and full cooperation. A strong letter of permission to carry out this research from the highest authority in the city of Riyadh (see appendix E) was shown to each respondent to gain his/her cooperation as the first step. Explaining in simple language the purpose of the study and its benefits to their community was the second step. The third step to convince them to cooperate fully was the genuine promise from the researcher that the personal information which they provided should be kept secret and would not be used except for scientific purposes (as mentioned before). The seventh obstacle facing the researcher and her husband was that despite their efforts to explain who they were and what they were attempting some of the low income respondents looked upon them as a government representative, and attempted to discuss personal problems totally unrelated to the research. The processes of collecting the field work data were executed successfully according to the planned timetable. This also could be explained by the fact that the respondents help by understanding and cooperation could be seen as a good implication of mutual and positive relationship between the researcher and the respondents helping to obtain good and satisfactory results. The eighth obstacle faced in this study was the discrepancy between what people say they do and believe, and what they practise in reality. This sort of situation was anticipated as most sociologists and anthropologists encounter this problem. In this, study, therefore, cross-checks were built into the questionnaire, in the form of questions and attitude statements that approached the same topic in different words. Comparison of answers would reveal discrepancies between what respondents knew and what they actually practiced, such

discrepancies can be demonstrated by the following three examples: Firstly: Question (44) asked respondents "What type of feeding they practised with their infants? Bottle feeding, breast feeding, mixed feeding? The replies indicated that 64.2% were practising mixed feed, with 21.6% of them were using bottle feeding and only 11.3% were breast feeding. On the other hand in response to statement (19) "Mothers should keep away as far as possible from bottle feeding their babies" 84.5% of the respondents agreed. Composing the respondents answers to question (44) and statement (19) it appears to demonstrate that people stressed a strong belief highly in something ("keep away form bottle feeding") while their real practises were not in line with their belief. That it is why respondents who used bottle feeding outnumbered those who are practising breast feeding. Secondly: Question (30) asked "How often do family members consume fresh fruits and vegetables?" The respondents reported that 64.2% , 61.3% and 48.7% of men, women; and children respectively ate fresh fruits and vegetables everyday. Moreover, 8% , 8.3% and 11.9% of men, women; and children respectively never or rarely eat fresh fruits and vegetables. This did not reflect what respondents thought about the importance of eating fresh fruits and vegetables in response to statement (3) "Eating fresh fruits and vegetables does not help human health", 97.7% of the respondent strongly believed that eating fresh fruits and vegetables is very important for human health. Also, 85.8% of respondents agreed with the statement that "nowadays, Saudi families consume starches, fats; and sweet foods more than fresh fruits and vegetables". Thirdly : Question 65 was "How many times do you brush your teeth daily?" The respondents' answers showed that 55.8% of them brushed their teeth once a day and 8.4% never brushed their teeth. This is a real picture of what people do as far as taking care of their teeth is concerned, but how people think about brushing their teeth is another matter .It appears that thinking and believing about something is far greater than what people do and practice in real life. That is quite obvious if we compare respondents' answers to question (65), as cited above and their response to statement (10). "it is not necessary for the person's health to clean his/her teeth with brush and tooth paste in the

morning and evening". 92.9% of the respondents thought it is very important for health to clean the teeth morning and evening. Such discrepancies, as in the above examples are understandable where people feel that the questions address behaviour which they knew that they should not be doing, for example, eating too much fat and carbohydrate. In studies of smoking and drinking for instance, it is known that people always underestimate their actual intake, because they feel a bit guilty about admitting how much they smoke when they know it is bad for them.

Conclusion:

This chapter has explained the usage of a specific methodological approach which is of a quantitative nature by administering the social survey and research techniques of questionnaire. It was explained that the study sample not only was randomly chosen, but also, was a random stratified sample. The SPSS package was used in the statistical analysis providing for Chi-square and Cross-tabulation utilization. The method adopted enables the researcher to formulate an accurate picture of Saudi diet and dietary habits and practices understanding how they have changed. The findings will be discussed in more detail in the following Chapters.

Chapter Four

CHANGES IN DIET AND DIETARY PRACTICES

Introduction:

Diet and dietary habits are parts of Saudi social reality, and they are not immune from the general tendency of social change. Therefore, diet and dietary habits and practices in Saudi Arabia have undergone various changes and modifications within the last 40 years, as it has been noticed in other countries. This trend might be thought of as a sign of early globalization. The traditional stable diet in Saudi society was very basic and of local origin limited to various kind of wheat, corn, dates, milk and very few vegetables and fruits. However, this pattern and system of diet and dietary practices has changed radically to encompass a wide variety of foreign products as well as new dietary habits and practices. This openness of Saudi society to the international market in the realm of food is a result of an economic boom of the last fifty years. It is not within the scope of this study to expose all changes which are taking place in Saudi society, but to focus instead on some factors that may seem crucial and responsible in shaping and affecting Saudi diet and dietary practices. As this chapter will show, education could help in introducing , promoting and expanding diet, dietary habits and practices in various ways among men and women, young and old, at all social levels. In this chapter, it will be useful first therefore, to shed some light on the Saudi traditional staple diet concerning general changes taking place in Saudi patterns of diet and dietary habits¹, before going on to discuss in detail the findings of the survey of Saudi diet .

Traditional Saudi Diet:

Before oil was discovered, agriculture, pearl diving, fishing, seafaring and trading played important roles in the economy . Wheat (in the form of bread) milk and dates were the most commonly consumed foods. Fish was eaten by those in coastal areas. Dates were widely eaten either as snacks or with meals. Meat was eaten on certain occasions. 'The diet

¹-Change in diet means change in the types of food, while change in dietary habits means change in the ways or manners of eating.

was nearly the same every day and there was no diversification of food eaten' (Musaiger 1987:15). In the past, typically, the Saudis used to eat two or three meals a day. The first meal was usually taken after the early Morning Prayer (*Fajr*). It consisted of Arabian Coffee and dates followed by *Laban* (buttermilk from goat's or cow's milk) and *Henainy*. Then everybody went to the farm or village where they worked. Midday at afternoon prayer (*Dhour*) they ate their lunch which might be like *Gursan* (flour, meat, vegetables, tomato sauce, salt and onion) or *margoug*, (Flour, meat, vegetables, tomato sauce, salt; and onion) or *Jareesh*, (Wheat, meat, onion and buttermilk) or *Marasea*, (Flour, Salt, Tomato and Onion) or *Asidah*, (Wheat, maize, meat, salt and onion) dates, milk; and meat when there were guests. It was a sign of hospitality to serve meat to guests. The meat of ibex and rabbits was often consumed, according to their availability, and on rare occasions meat from a sheep, goat or camel that one of the villagers had butchered was consumed with whatever vegetables and fruits were available from their own farms. Supper was usually the main meal of the day. It consisted of *Jareesh* or *Gursan* or *Marasea* with *Laban* or Arabian Coffee and dates. Saudis drink a lot of Arabian Coffee and eat dates throughout the day.

These habits have changed with coming of international food companies to the Kingdom. Arabian Coffee is replaced by tea. Rice has gradually replaced whole wheat as the more popular staple food, only dates remain as the mainstay of snack food eaten between meals. However, the most common beverages of people were water, coffee and tea when available or ginger in winter. During *Ramadan* and other special occasions they used to drink *oqut*. (dried yogurt mixed with water). Whereas two surveys about change in dietary habits among sedentary, semi-sedentary and Bedouin areas, conducted in the Western Region in 1967 and 1981, recalling the last 24 hours intake revealed that sedentary families tend to consume more meat, dairy products, fruits and vegetables than the other two groups whose diet was mainly comprised of wheat, rice and date with little variety of foods. Sebai, during the fourteen years that separated these two surveys, noticed that 'dietary

habits had changed. Although grains made into bread (mainly wheat) and rice (different types of kabsa) were still the main food, consumption of lamb and beef meat was on the increase' (1981a). Contemporary Saudi meal patterns have changed greatly from this traditional picture with the change in lifestyle due to the economic boom following oil discovery as discovered by other researchers. One of these changes is the traditional early morning meal of Arabian Coffee and dates. This has persisted among the older generation, but the Saudi young generation has a different meal pattern. For breakfast they eat sandwiches, eggs, canned food and corn flakes with milk and drink Nescafe or tea. Al-Dhufairi indicated that:

'a considerable change in the nature of foods has taken place in the Saudi meals during the last 30 years. For example the fat consumption has significantly increased. Now it constitutes about 40 – 50% of the Saudi meal ingredients. This is mainly caused by the wide spread of eating at fast food restaurants, as well as the focus on a single dish such as rice with chicken or meat. This menu is often repeated twice daily. This in turn has led to negative effects on the general health of individuals. This practice has led to the increase of high rate of obesity, high rate of blood cholesterol, sclerosis, high blood pressure and diabetes. The Saudi dietary habit does not provide prevention for diabetic patients due to the excessive intake of rice, fats, carbohydrates, sweets and lack of high fibre food. Eventually this practice has led to increase of diabetes in the Saudi society' (Al-Riyadh, No. 11101, 15/11/1998 :16).

A survey carried out in 1995 on food and dietetic condition among the population of the Kingdom of Saudi Arabia, (K.A.C.S.T.) revealed that milk and dairy products were preferred and consumed daily by 60% of the survey sample. The survey also showed that the population preferred to consume dairy products in the form of liquid milk, buttermilk and cheese. The average consumption of these items was 182 ml., 144 ml., and 26 gm/day consecutively. Animal product consumption (meat and eggs) is high in the Gulf countries, particularly in Saudi Arabia compared to consumption of the same items in industrial countries. The per capita consumption in the Gulf countries is 60-70 kg/year of meat and 8-12 kg/year of eggs. Mean (FAO/RNE, 1997). Meanwhile, the daily per capita consumption of meat in Saudi Arabia, according to the survey of the Ministry of Agriculture and Water Food Balance Sheet (1993-1995) on the dietetic status of the population in the Kingdom, was about 234 kg/ year . Saudis mainly prefer chicken and red meat in general. Consumption of these two items was 123 and 128 gm per capita

respectively. The survey disclosed that 80% of the respondents consumed lamb daily, while 40% consumed chicken 1-3 times per week. Egg consumption was very high with 70% of the subjects stating that they consumed eggs 2-7 times per week, depending on the area. Some 35% of the respondents consumed eggs daily. Bedouins, however, preferred consuming camel meat. 20% of the survey sample stated they ate camel meat 2-3 times per week. Fish was at the bottom of their preference at 28 gm. per day. Saudi people do not eat much fish as only 29.2% of the respondents consumed fish 2-4 times per week. Fish consumption is primarily found in coastal areas. Consumption of cooking oil and fat is generally high. Consumption of these items is 30 kg/year per capita. Oils and fats contribute to the total energy by about 30% according to this dietetic evaluation. Also it was estimated the daily per capita consumption of fats at 145 gm, of which 58% were animal fat.

Table 4-1 Daily Per Capita Consumption of Energy, Protein and Fats in the Kingdom of Saudi Arabia between 1961-1995 *. (1-2)

Year	Kilo Calorie	Protein (gram)	Fats (gram)
1961	1772	48.1	26.5
1971	1886	48.3	33.9
1981	2777	77.7	80.2
1989	2874	86.5	82.5
1990-1992	2932	82.0	85.1
1993-1995	3000	80.6	84.9

* 1- Dietetic Balance Table for the Kingdom of Saudi Arabia 1993-1995.

2- (K.A.C.S.T. 1995).

The present pattern of meal consumption differs from the pattern prevailing in the past. (See table 4-2). A brief survey of the meal pattern in the past was carried out by Al-Shagrawi and others (1999) who surveyed elderly people over 60 years of age at King Saud University. Their study showed that in the past people used to eat at most two meals per day. 50% of the survey sample mentioned that they used to take two meals per day, breakfast and dinner. Breakfast was served at dawn while dinner was served in the early evening to compensate for the absence of lunch and due to the fact that people used to go to bed early. One third of the

survey sample stated that they used to consume little rice, perhaps only 1-2 times per week. The majority of subjects stated that everyday they ate whole-wheat bread, which was made at home by women. They consumed *Gursan* twice a week. Vegetables were consumed once a week. These included tomatoes, pumpkin, squash, eggplant, beans and okra cooked in a sauce. The pattern of fruit consumption was the same as that of vegetable consumption. In the past the main fruits were watermelon and sweet melon, with a few pomegranates, grapes and small sized apples in some seasons. Dates were the most common fruit in the daily diet. They were usually taken with home produced butter, coffee, tea and oqut (dried yogurt), perhaps many times per day, with meals or between meals. Two thirds of the sample consumed meat once a month, while the other third did so once a week. Camels, goats and sheep were the sources of meat. Homemade butter was the main source of fat, as no vegetable oil was available. Butter was often used for cooking, although it was mostly consumed with dates. Milk respectively was consumed daily derived from goats, sheep cows and camels. 50% of the sample stated that they used to eat snacks between meals once a day, when they joined their guests. It is clear that there have been many changes in food and dietary habits in S.A. 96.4% of the study sample agreed with statement 47 (Appendix A) that there have been changes in family diet from the past to present time. However, one cannot appreciate nor understand the enormous impact of these changes in the Saudi diet and dietary habits unless one compares the present diet with diets in the past. Since Al-Shagrawi's study dealt with dietary pattern in the past. Then he used (K.A.C.S.T) survey to show the Saudi diet nowadays.

At present, there are three main meals , with light snacks in between. Breakfast is usually taken nowadays relatively late starting from 6.00 am. on school days, while at weekends and during vacations people tend to have their breakfast very late or quite often skip breakfast. It tends to comprise of eggs, cheese, sweet, dishes, olives, camel or lamb's liver, lentils, bread, yogurt, broad beans (foul) and jam. Tea, coffee and juice are the common beverages. Lunch may be served any time from noon until very late afternoon.

People mainly eat rice (kabsa) vegetables, cooked with sauce, salad, meat (mostly lamb, goat or chicken), fruits and juices and sweets (jelly, cakes and custard). They drink soft drinks and tea.

Dinner is often served after the Isha prayer 10.00 p.m. until late at night or the early morning of the following day. People often eat rice (kabsa or saleeg), sweets, olives, cheese, yogurt, *laban*, *mutabbag* and some fruits (K.A.C.S.T. 1995). In recent times consumption of fast foods such as grills, roasts, *shawurma*, pizza, fish, lentils, *foul* and stuffed pastries at dinner time is also on the increase. Moreover, intake of snacks is on the increase. They mainly comprise of soft drinks, juices, cakes, pasties, milk, tea, coffee and fruits, etc. Consumption of these items is high at educational institutions such as schools, institutes and universities, and they are also consumed in commercial and industrial firms or dietetic and health facilities such as hospitals, where snacks are provided as a part of planned diet programmes. It appears that we are witnessing various changes and alterations in food consumption during the last 40 years in the Saudi society. This assertion is well documented and quite clear in Al-Shagrawi's findings, as shown in the following table.

Table 4-2 : Meal, consumption and Saudi Food Pattern in the Past and Present.

A. Pattern of Meals:

Pattern	In the past (some 40 years ago)	At present
Number of meals	2 or 3	3
Breakfast	Almost daily	Daily
Time	Early (at a specific time after Fajr prayer) dawn.	Relatively late (different times).
Types	Dates, Milk, Laban, coffee/tea, bread and domestic butter.	Eggs, cheese, sweets, olives, liver, (lamb or camel) bread, tea, lentils, fowl and jam.
Lunch	Sometimes	Daily
Time	Late to substitute dinner most often, except where there were guests.	Normally after Dhuhr prayer (1.00) until after Ushr prayer. 4:30 p.m.
Types	Laban, dates, meat (sometimes when there was a sheep slaughtered for guests) marasea, jareesh, margoug.	Rice, vegetables, (cooked and salads) meat (lamb or chicken) fruits, juice, Pepsi/tea, pastries, cake, sweets, jelly and custard.
Dinner	Almost daily, more often taken than lunch, normally taken in lieu of lunch.	Daily
Time	Relatively early (late lunch and early going to bed)	There is no specific time, starting from isha prayer until late night.
Types	Gursan, dates, margoug, jareesh, sorghum porridge, milk/labab, and bread.	(One item or more), rice, sweet, olives, cheese, yogurt, laban, bread, mutabbag, with some fruits, sometimes fast foods such as roasted chicken, pizza, fowl, lentils, fish, liver at times.
Snacks	Rarely	At increasing rates and vary according to regions.
Time	In lieu of lunch.	Between main meals.
Types	Dates, milk, laban, ginger in winter.	Cake, fruits, juice, tea, coffee, milk and dates.

B- Foods:

Type	In the past (some 40 years ago)	At present
Bread	Almost daily	Daily
Grains	Always from whole wheat.	White flour and whole wheat at times.
Types	Limited	Variety
Preparation	At home by women and men.	Outdoor, by commercial stores.
Rice	Rarely	Always
Types	Preshawar, Unbar (Iraqi), Egyptian	Different types, Egyptian, Pakistani, Indian, Swiss, American etc.
Preparation	Boiled in water and salt.	Different types of Kabsa and saleeg.
Beverages	Coffee, tea (coffee more often) tea when milk is available, laban, ginger in winter, and Iqut in Ramadhan.	Juices, soft drinks, beer.
Meat Pattern Types	Once per month Camel, lamb and rarely beef.	Daily Lamb, chicken, camel.
Eggs	Rarely	70% consume eggs 2-7 times per week.
Dates	Always	Relatively less now, but it is a common diet for 54% who use it daily.
Vegetables Pattern Types Preparation	Intermittent consumption but rare Tomatoes, squash, beans, eggplant, rocket Cooked in sauce or eaten fresh.	Common habit for 38% who take them daily. All types of vegetables cooked for fresh.
Fruits Pattern Types	Rarely Watermelon and sweetmelon, and few of pomegranate, grapes.	Always All types
Milk and diary products pattern Types	Always (daily) Fresh (goats, sheep, cows and camel's milk).	Daily by 60% of the respondents Fresh (cows and goats' milk), powder milk, yogurt and cheese.
Oil and fat Pattern Type	Rarely Domestic butter and animal fat.	Daily Vegetable oil and rarely animal fat.

1- Al-Shagrawi *et al*, 1999:8-22.

2- King Abdulaziz City for Science and Technology 1995.

It is not only Al-Shagrawi *et al.*, and (K.A.C.S.T) who have noticed changes in Saudi food consumption patterns, Musaiger *et al*, have reached the same findings 13 years earlier as they pointed out:

'there has been a drastic change in food consumption patterns with the increased incomes as a result of the oil boom. In Saudi Arabia the traditional diet which consisted of dates, milk, rice, bread and fish has changed to a more diversified diet. Red meat is consumed more frequently than fish or poultry. Mutton and lamb are preferred over beef. Rice is still the most staple cereal and it is eaten almost daily with other complements. Wheat is mainly consumed as bread, burghol (Parboiled Wheat) or macaroni. Milk and diary products have become essential items in meals, particularly Laban (buttermilk), cheese, butter and yoghurt, nuts, seeds, soft drinks, corn puffs, potato chips,

chocolates, and sweets are the main food consumed in between meals and snacks. Tea is the most popular drink and is consumed sweetened with or without milk. Fast food, such as beef burgers and fried chicken are widely consumed especially by the young generation' (Musaiger 1987:126).

It is also of valuable insight to this study to consider what has been reported in other cultures about food consumption in the past and at the present time. Beardsworth and Keil (1997) offered some characteristics of traditional and modern food systems in four human activities: production, distribution, consumption and beliefs. The changes, shown in detail in table 4-3, are applicable not only to Western societies but also in Saudi society, underlining the suggestion that globalization of food processes is a new trend to be borne in mind in future food planning policies. Looking at the food situation in Saudi society in the past and at present, it could be said, that traditional and modern food systems in Saudi Arabia are broadly similar to those socio-economic factors of other societies, despite the wide variety between them in their culture, socio-economic and environment.

Table 4-3 : Contrasts between traditional and modern food systems.

Activity	Traditional Systems.	Modern Systems.
Production	Small-scale/limited locally based for all but luxury goods high proportion of population involved in agriculture.	Large-scale/highly specialized/industrialized de-localized/ global. Majority of population have no links with food production.
Distribution	Within local boundaries exchange governed by Kinship and other social networks.	International/ global. Access governed by money and markets.
Consumption	Swings between plenty and want dependant on harvests and seasons. Choice limited and dependent on availability and status . Nutritional in equalities within societies.	Food always available at a price/independent of seasons. Choice available to all who can pay Nutritional inequalities between and within societies.
Beliefs	Humans at the top of the food chain/ exploitation of the environment necessary.	Debate between those who believe in human domination of the environment and those who challenge such as model.

Beardsworth and Keil. 1997:33.

In spite of the fact that there have been some changes in food consumption patterns in Saudi society, however, some traditional food and food practices still exist. . At the same time

traditional food and dietary habits are currently embracing new patterns under the influence of foreign cultures and through the amalgamation of new consumption patterns into traditional ones. This is evident, for example, in the rapid and wide range spread of fast food outlets, where Western and Eastern restaurants are found side by side with traditional food service places¹ in big cities and towns. On social occasions such as parties and festivals, traditional food can be found side by side with new non-Saudi food as part of the new trends of food consumption. Within the general pattern of the Saudi diet, there are, however, individual and regional differences. Each region has its own food styles including some highly specific dishes. For example, *Margaug* and *Gursan* are Central Regional dishes. While *Harisah* and *Sayadyah* are Eastern Regional dishes. *Motabbag* and *Buff* dishes are from the Western Region. The Southern Region has its own dish *Arikah*. For instance, as this study was carried out in Al-Riyadh (Central region) it is useful to give a brief description of the three main meals in this region² (Najd) as follows:

Breakfast:

This usually consists of bread, cheese, eggs, honey, yogurt and other canned food, milk, tea or coffee. Lamb's liver, kidney and hearts are preferred. Also *foul* and bread are commonly consumed. *Henainy* (Flour, honey or dates and goat's or cow's butter) and *Asedah* (Flour, wheat and goat's butter) are less often consumed.

Lunch:

This is the main meal for the family. It consists of *Kabsa* (Rice and Meat) which is the staple food, *Margoug* or *Gursan* or *Jareesh* or *Marasea*, accompanied by green salad and fruit. After a heavy meal like this, a siesta or noon nap follows. On special occasions a complete

1-These places or premises serve take away traditional food in large quantities. These places started to come into existence gradually 30 years ago.

2-These meals had little changes from those of the 1989 study as it had been exposed in page 186.

sheep, or more than two or three sheep, are cooked for guests and laid on big circular dishes of rice ¹. Chicken is not often considered as a suitable meal for guests. Fish is rarely used.

Dinner:

This consists of *Kabsa* or *Saleeg* (chicken or meat sauce, rice, milk, oil and salt) or soup or *foul* and bread or canned food such as olives, honey, tuna, cheese; and cream etc. Yogurt, milk and buttermilk are preferred as a drink, especially among elderly people as shown in table 4-9.

After exposing and describing the Central region main daily meals, meal patterns and food consumption of the survey sample are described in detail below.

Table 4-4 : Distribution of respondents according to the main meal in their diet.

The main meal	Fr.	%
Breakfast	9	2.9
Lunch ²	286	92.3
Dinner ³	11	3.5
No Reply	4	1.3
Total	310	100

Table 4-4: illustrates that lunch was regarded as the main meal by the majority of respondents, 92.3%, while breakfast was the least important. This finding confirmed by Al-Othaimen's study finding that 'breakfast is the least important daily meal' (1991). Also it is similar to a study conducted by female students in King Saud University where 'most respondents did not take breakfast at home before coming to class. Their main meal was lunch' (1993) Hence a simple message about the need to make breakfast a real meal can be a powerful means of improving diet and health of children, with possible positive influence

1-Furthermore, in the extended family, especially in rural and bedouin areas, meals are usually shared, but men and women eat separately. At lunch or dinner time all family members, men and women separately, sit around a big dish (Tabsy) in which the food is placed and they eat together with their hands. This eating habit may increase the possibility of spreading communicable disease since people are eating from a common dish, this is especially true in big parties where many people eat from the same dish with their hands. (See Appendix-D 14,15) . This dietary habit may have negative effect on people's health. Simon indicated that 'Eating habits in the extended family can increase the chances of spreading communicable diseases because they involve eating from a common dish. They also, inhibit changes in the basic diet which can lead to deficiency diseases' (cited in Al-Shammasi 1986:297).

2-Lunch is usually heavy and eaten between 1:00 - 4:30 PM. in the afternoon.

3-Dinner is usually light and eaten late between 9:00 - 11:00 in the evening.

on future adult health. It is certainly for this reason that the importance of breakfast is included in many educational programmes promoting healthy diets and lifestyles. It is clear from table 4.4 that lunch was the respondents main meal. Further elaboration in this context, they have been asked "What do your family's main meal consist of ? "The study respondents answers of this question were as follows:

Breakfast may consist of several items: Bread is first 33.9%, followed by eggs 33.6%, milk 30.7%, cheese 29%, *Foul* 22.6%, canned food 19.7%, and tea, sandwiches, and corn flakes were each consumed by 4.8%. Fruit juice was the least consumed at 3.9%. Few respondents mentioned taking Yogurt, Lamb's liver, Kidney or Hearts. Thus, traditional breakfast foods like *Henainy* and *Asidah* are often consumed less these days.

Lunch consists of *Kabsa* mentioned by 79.7% of the respondents, followed by cooked vegetables 68.4%, meat 51%, chicken 47.7%, fresh vegetables 44.2%, fruits 34.8%, fish 9%, pasties 7.7%. Macaroni came ninth. Traditional foods were the least consumed, with only 14.2% of the respondents eating any type of traditional foods, *Margoug*, *Gursan*, *Jareesh* or *Marasea*.

Dinner consists of canned food according to 22.3% of the respondents. Bread is the second most common item at 21.9%, eggs third with 18.7%. Other food mentioned were cheese 14.2%, milk and buttermilk 11%, fowl 8.1%, rice and cooked vegetables 7.7%, sandwiches 7.1%, and fast food 6.5%. A few respondents said they ate traditional foods 6.1%. Fresh vegetables were the least consumed, 3.2%. These findings give a very broad picture of contemporary Saudi family daily diet and patterns of consumption, suggesting that it is rich in most of the necessary elements which are essential for human nutrition need. Table 4-5 demonstrates in more detail the study respondents' consumption and dietary practices. Not only that, but also it shows how and what Saudi people eat.

Table 4-5: Distribution of respondents according to their consumption of main foods.

Type of Food	Every day		Twice a week		Once a month		Never	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%
Rice	257	82.9	46	14.8	6	1.9	0	0.0
Margoug	1	.3	62	20	186	60	60	19.4
Gursan	1	.3	38	12.3	201	64.8	70	22.6
Henainy	3	1.0	7	2.3	119	38.4	180	58.1
Jareesh	1	.3	57	18.4	182	58.7	70	22.6
Marasea	4	1.3	30	9.7	123	39.7	153	49.4
Arikah	0	0.0	9	2.9	48	15.5	252	81.3
Asidah	1	.3	21	6.8	78	25.2	210	67.7
Harisah	1	.3	20	6.5	53	17.1	235	75.8
Macoroni	8	2.6	181	58.4	114	36.8	7	2.3
Chicken	171	55.2	124	40	12	3.9	3	1.0
Fish	7	2.3	119	38.4	262	84.5	234	75.5
Red Meat	74	23.9	181	58.4	47	15.2	8	2.6
Tabbouleh or Salad	198	63.9	68	21.9	31	10	12	3.9
Makhamer	2	.6	15	4.8	60	19.4	231	74.5
White cheese	97	31.3	139	44.8	60	19.4	14	4.5
Cream cheese	167	53.9	107	34.5	23	7.4	13	4.2
Canned (Cooked) Cheese	60	19.4	107	34.5	72	23.2	71	22.9
Canned (Uncooked) Cheese	34	11	74	23.9	84	27.1	117	37.7
Eggs	139	44.8	148	47.7	18	5.8	5	1.6
Pastries	11	3.5	142	45.8	127	41	30	9.7
Arabian Confectionery	12	3.9	91	29.4	178	57.4	29	9.4
Non-Native Confectionery	5	1.6	44	14.2	170	54.8	89	28.7
Fresh fruits	181	58.4	90	29.0	30	9.7	9	2.9
Dried fruits	6	1.9	10	3.2	56	18.1	238	76.8
Fresh vegetables	205	66.1	84	27.1	18	5.8	3	1.0
Canned vegetables	9	2.9	23	7.4	75	24.2	203	65.5
Yogurt	147	47.4	118	38.1	35	11.3	10	3.2
Dates	246	79.4	49	15.8	13	4.2	1	.3
Cream	66	21.3	140	45.2	82	26.5	22	7.1
Honey	104	33.5	128	41.3	59	19.0	18	5.8
Jam	45	14.5	146	47.1	84	27.1	34	11.0
Nuts	26	8.4	125	40.3	131	42.3	27	8.7
Biscuits	65	21.0	167	53.9	66	21.3	12	3.9
Olives	93	30.0	156	50.3	53	17.1	8	2.6
Foul (Broad Beans)	43	13.9	160	51.6	95	30.6	12	3.9
Beans	13	4.2	102	32.9	146	47.1	49	15.8
Lentils	15	4.8	86	27.7	145	46.8	64	20.6
White bread	252	81.3	41	13.2	10	3.2	7	2.3
Dark bread	133	42.9	73	23.5	67	21.6	37	11.9
Mutabbag	2	.6	29	9.4	193	62.3	76	24.5

The survey results summarized in table 4-5 show that the majority of respondents 82.9%, ate rice every day. This is now the staple food in Saudi Arabia. White bread is second, 81.3%. Dates third, 79.4%. Saudi people eat a lot of dates, either with meals or between meals with coffee for guests. Dates continue to be an important food in the Saudi daily diet. Not only in the past, but also, nowadays dates symbolize Arabian hospitality. Dates are the only Arabian traditional food which have not been given up to the winds of change. This finding is similar to Gibbon's study (1988) mentioned in chapter two. Fresh vegetables were the fourth, 66.1%, most popularly consumed food, cooked vegetables and fresh vegetables were eaten in *Tabbouleh* or salad, 63.9%. Fresh fruits were important and consumed regularly by 58.4% of the respondents.

The most commonly used meat was chicken, 55.2%, coming sixth. Cream cheese was seventh, 53.9%. Respondents consumed cream cheese quite often, more than white cheese, 31.3%. Yogurt is a popular dairy product consumed by 47.4% of the respondents, coming eighth overall. Eggs, ranked ninth in the list of foods consumed, 44.8%, but this still represents quite a high rate of consumption compared with the past, which suggests that Saudi people are now inclined to consume eggs quite often. Dark bread was consumed by many respondents, 42.9%, coming in tenth place. Red meat was eaten daily by 23.9% of the respondents. Thus, the evidence suggests that red meat (lamb, goat, camel and beef) is nowadays being supplemented by chicken. This shift to mass consumption of chicken meat in Saudi society may be because chicken is cheaper and it is available in all grocery stores. Only a few respondents mentioned that they ate fish, 2.2% every day. This low fish consumption in the study sample could be due to the fact that Riyadh is not a coastal city, and fish is not abundant. It seems moreover, that many people are not keen on having fish in their daily diet, because it is not part of their traditional food or diet. Arabian confectionery was consumed more than non-native, either because Saudi people prefer them or because of their low price or availability. Respondents ate sweet foods like cakes, pies, pudding, cream caramels and donuts etc. either with meals or between meals. Traditional foods such as *Jareesh*, *Margoug*, *Gursan*, *Henainy*,

Marasea, Arikah, Asidah, Makhamer, and Harisah were little consumed and only a few respondents ate them every day. The majority of respondents ate them twice a week or once a month or not at all, either because they take more time to prepare or perhaps because younger women do not know how to prepare and cook them. Also, it could be argued that many Saudi families depend on non-Saudi housemaids in cooking their meals, who do not know how to cook Saudi traditional food. Moreover, the Saudi young generation prefers fast food more than traditional food.

Looking at table 4-5, it is clear therefore, that rice and white bread are the most consumed daily food item which might be regarded as an indication of poor dietary awareness of respondents, since excessive consumption might lead to an unbalanced diet. Saudi people have become accustomed to consume rice and meat. Excessive consumption of rice in a society might not be an encouraging healthy sign, due to the fact that a proper healthy balanced diet ought to be composed of different basic food groups, which does not appear to be the case in Saudi diet. This acute situation is quite evident where Saudi Arabia is on the top list of countries that import rice as Haseebullah *et al.*, (1996) mentioned that 'Saudi Arabia is the biggest market in the Middle East for rice imports with annual market sales of approximately 550,000 metric tons' (1996:11). And in 1998 its imports were 750,000 tons of rice per annum. (Al-Riyadh No. 11101, 15/11/1998:1) In 2000 rice imports were estimated at 1,852,760 tons. (The statistical Indicator 2000:76) Moreover, a study conducted in Riyadh (1998) indicated that '66% of the respondents said that a meal of chicken and rice is essential in their diet. 58.8% mentioned that they consumed chicken and rice twice a day' (Al-Riyadh, No. 11101, 15/11/1998:16). AL-Sudairy and AL-Tahir (1998) in their study showed that 'Inhabitants of AL-kharkhir area (south of the country) follow a number of food habits. For instance, 65% of the population eat tuna on a weekly basis, 53% of them eat it on a daily basis. Regarding fresh vegetables only 26% of the population eat tomatoes and 15% eat potatoes on a daily basis. Most people eat fresh vegetables and fruits on a weekly basis. However, the most popular dairy product was goats'

milk. While a total of 72% of AL-khirkhir families drank goats' milk, 53% of the families consumed it on a daily basis as shown in the table below:

Table 4-6 Percentage of Families who consumed certain types of food.

Type of Food	Daily	Weekly	Monthly	Total
Meat:				
Goat Meat	9%	50%	26%	85%
Tuna	53%	10%	2%	65%
Dried Fish	9%	35%	10%	54%
Camel meat	—	5%	—	5%
Vegetables:				
Tomato	26%	19%	8%	53%
Cosa	5%	29%	8%	42%
Potato	15%	12%	2%	29%
Canned beans	4%	6%	2%	12%
Okra	5%	—	3%	8%
Green beans	5%	—	—	5%
Fruits:				
Orange	3%	47%	17%	67%
Apple	5%	47%	16%	68%
Banana	3%	47%	13%	63%
Grape	1%	13%	6%	20%
Milk:				
Goat milk	53%	16%	3%	72%
Milk powder	14%	3%	—	17%

Al-Sudairy and Al-Tahir 1998:200.

Exposing Al-Kharkhir community as far as their food consumption is concerned, enabled us to have another feature of Saudi society food consumption. Moreover, the study sample consumption of fresh fruits and vegetables will add to our understanding of Saudi families' diet and dietary habits, as shown in table 4-7.

Table 4-7 : Distribution of respondents according to family consumption of fresh Fruits and vegetables.

Family Members	Family consumption of fresh fruits and vegetables.													
	Every day		Twice a Week		Once a week		Rarely		Never		No Reply		Total	
	Fr.	%	Fr.	%	Fr	%	Fr	%	Fr.	%	Fr.	%	Fr.	%
Father	199	64.2	56	18.1	25	8.1	23	7.4	2	.6	5	1.6	310	100
Mother	190	61.3	72	23.2	22	7.1	24	7.7	2	.6	0	0.0	310	100
Children	151	48.7	80	25.8	34	11.0	31	10.0	6	1.9	8	2.6	310	100

The survey results summarized in table 4-7 show that the majority of respondents fathers and mothers, 64.2% and 61.3%, ate fresh fruits and vegetables every day. While those of the two groups who rarely or never ate fresh fruits and vegetables represented 8% and 8.3%. This represents a good improvement from the finding of K.A.C.S.T. (1995) that 38% of the respondents consumed fresh vegetables every day and 40% ate fresh fruits daily. Nevertheless, it is a matter for concern that many respondents rarely or never ate fresh fruits and vegetables suggesting that this should be the subject of a health and diet promotional programme in the near future. As far as children's consumption of fresh fruits and vegetables is concerned, 48.7%, is very low with alarming implications for health. It is widely accepted that there is a strong relationship between diet and health. Children's poor diet might lead to some negative consequences, as was reported by Radford, in the Guardian 22/8/2000:5, that the risk of asthma, the single most important cause of illness in children in Europe, could be exacerbated by excessive consumption of junk food and not enough fresh fruits and vegetables. Two studies carried out by British and Saudi teams, headed by Professor Anthony Seaton, Head of Environmental and Occupational Medicine at Aberdeen University, found that a diet relatively poor in vegetables, fruits, and nutrients increases the risk of asthma. There has been two to three fold increase of asthma cases in Saudi Arabia. Another confirmation of this fact came from Khoja as he pointed out ' the number was 2 millions cases in the year 2000' (Khoja 2000:178). Seaton affirms that there is

now consistent evidence that diet is an important factor in determining whether or not a genetically predisposed individual actually develops the disease. Radford notes: 'this is an interesting study and one that is consistent with other studies that suggests that taking fresh fruits and a balanced diet protects against Asthma and some other lung diseases.' Moreover, the Saudi study has been matched by research in North America, as Radford reported. He quoted Professor Reaston's conclusion as follows: 'We have now shown that dietary factors are associated with two to three fold risk of having such symptoms' (Guardian:5). After examining respondents' consumption of main food stuffs, it is worthwhile shedding some light on the pattern of family consumption of drinks, as shown in the following table.

Table 4-8 : Distribution of respondents according to family consumption of drinks.

Type of Drink	Every day		Twice a week		Once a month		Never	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%
Low fat milk and butter milk	112	36.1	54	17.4	33	10.6	110	35.5
Full fat milk	180	58.1	61	19.7	32	10.3	35	11.3
Arabian Coffee	213	68.7	64	20.6	26	8.4	7	2.3
Foreign Coffee	63	20.3	75	24.2	132	42.6	40	12.9
Tea with sugar	276	89.0	19	6.1	2	.6	13	4.2
Tea without sugar	55	17.7	21	6.8	24	7.7	209	67.4
Mint	74	23.9	133	42.9	77	24.8	26	8.4
Ginger	39	12.6	70	22.6	134	43.2	66	21.3
Herbal tea (Cumin etc.)	9	2.9	23	7.4	91	29.4	179	57.7
Fresh juice	76	24.5	132	42.6	78	25.2	24	7.7
Canned juice	85	27.4	101	32.6	80	25.8	44	14.2
Shani	25	8.1	55	17.7	75	24.2	153	49.4
Pepsi or Coca Cola	106	34.2	117	37.7	49	15.8	38	12.3
Merinda or Oragina	37	11.9	70	22.6	87	28.1	116	37.4
Seven Up or Teem	66	21.3	125	40.3	92	29.7	27	8.7

The survey results summarized in table 4-8 show that tea with sugar was the most popular drink, consumed every day by 89%. Only a few people drank it without sugar, 17.7%. Arabian coffee was second consumed drink, 68.7%. Arabian coffee is usually mixed with cardamom and served without sugar. This finding is similar to Gibbon's study mentioned in Chapter Two.

Foreign coffee is consumed less than Arabian coffee. Only 20.3% of the respondents drank it every day while most respondents, 42.6%, drank it once a month. Mint was less consumed than tea, 23.9%. Ginger and herbal tea were the least consumed of hot drinks, 12.6% and 2.9% respectively, although these drinks may be beneficial to health. This fact could be considered as a sign that people are unaware of the potential negative health effects of mass consumption of tea, although it is a dietary habit to which Saudi people are accustomed. Drinking tea right after meals is very common in Saudi society. However tea contains some elements restricting secretion of different digestive enzymes and may inhibit the digestive process. That is why proper absorption of food by the body may not take place. However, 48.7% of the study sample agreed with statement 15 (Appendix A) that drinking tea after main meals helps digestion (see table 4-8). Arabian Coffee being excessively consumed in Saudi Arabia might lead to many health problems, such as cardiovascular diseases. Full fat milk and butter milk were the third most popular drink, 58.1%, while milk with low fat was less frequently consumed, 36.1%. Milk and butter milk were the most popular dairy products. Drinking low fat milk and butter milk nowadays could be regarded as a sign of more positive health awareness of respondents, for traditionally Saudi people were milk drinkers, and in the past, people used to drink goat, sheep, cow and camel's milk because, they were the only local dairy products. But nowadays, many dairy products, including low fat versions, have been introduced into the market on a national scale.

A number of carbonated beverages are used every day as follows: Pepsi and Coca Cola, 34.2%, 7 Up and Teem, 21.3%. Diet Pepsi, 8.1%. This finding is similar to Gibbon's study 1988 mentioned in Chapter Two. The highest percentage in consumption of these cold drinks was for Pepsi and Coca Cola. Those people consuming a lot of carbonated beverages every day might be unaware of their negative effects on health, for example, an increase in the level of sugar and calories. Canned juices were used by 27.4% and fresh juices were less in percentage at 24.5%, maybe because canned juices are easy and ready to drink and cheap, or people are

unaware that fresh juices are healthier than canned juices. Different types of juices and carbonated beverages were consumed between meals more than at meals. The popularity of canned and bottled juices and carbonated drinks is consistent with the report of Haseebullah *et al.*, (1996) 'the local beverage market in Saudi Arabia is valued at about \$1 billion. The carbonated soft drinks sector accounts for at least 50 percent of the output. Concentrates for other beverages (fruit juice, diluted drinks, and powdered juices) are in demand' (1996:12). Tables 4.5 and 4.8 demonstrate that the Saudi main food and drink items become more numerous than they used to be in the past . Ultimately the Saudi diet has witnessed various changes. In other words, many new western and eastern food and drink items have been introduced to the Saudi diet. Some of these items appear to be of low nutritional food value such as: fatty, sweet and starchy foods or carbonated soft drinks. One suspects that they might have negative affects on the health and diet of Saudis at large, as not all changes are necessarily for the best but can lead to ill health.

Table 4-9 : Distribution of respondents by drinking milk and buttermilk

Family Members	Drinking Milk and Butter Milk (Laban)													
	Every day		Twice a week		Once a week		Rarely		Never		No Reply		Total	
	Fr.	%	Fr.	%	Fr	%	Fr	%	Fr.	%	Fr.	%	Fr.	%
Father	153	49.4	68	21.9	21	6.8	51	16.5	11	3.5	6	1.9	310	100
Mother	164	52.9	66	21.3	25	8.1	48	15.5	7	2.3	0	0.0	310	100
Children	206	66.5	42	13.5	21	6.8	33	10.6	2	.6	6	1.9	310	100

The survey results summarized in table 4-9 show that nearly half of fathers and more than half of mothers, children are drank milk or buttermilk every day, 49.4%, 52.9% and 66.5% respectively. This fact could be interpreted as a good sign of respondents' awareness of the importance of milk for health. While only a minority of fathers, 20%, mothers,17.8%, and children, 11.2%, reported that they either rarely or never drank milk or butter milk. This finding is similar to Gibbon's study 1988 mentioned in Chapter Two which answer the study question, "What are the types of foods and drinks commonly taken by Saudi family?"

After exposing the common types of foods and drinks taken by Saudi people, I will discuss in some detail some changes in dietary habits that have occurred. The usual eating and drinking patterns changed greatly with changes in lifestyle due to the economic boom following oil discovery, and other factors. The present day Saudis whose income have gone up have an entirely different meal pattern from those of the past, and is reflected in respondents' opinion when asked about changes in their diet and dietary habits during the last 20 years. This is clear in table 4-10. Furthermore, the types of change can be manifested in the responses to this question: "What are the changes in your family dietary habits?" 17.4% of the respondents acknowledged that they had no specific time for eating their daily meals, with only 1.9% of the respondents eating their meals at a specific time. Roughly 9.4% of the respondents reported that they had some of their meals outside in restaurants, whereas in the past they never went to restaurants. 13.9% of the respondents reported that they were used to new eating tools like forks, spoons, tissues and separate dishes, whereas in the past they ate with their hands from a communal dish. 18.4% of the respondents reported that they cooked food in different and new ways, which they did not know about 20 years ago. 11.9% of the respondents mentioned that they had their meals sitting at a table and dined occasionally from an open buffet at parties, whereas in the past they used to eat sitting on the floor. 4.8% of the respondents reported that members of the family no longer ate together, as they used to do in the past. This can be explained by the fact that in the past family members nearly always worked in the same place, either on a farm or at another local place of work. There were no schools for children, so all family members would be together to have their meals. Now, the family members have different kinds of work and children go to school. Thus, they come back at different times, making it more difficult to have their meals together than it was in the past. Also, each member of the family may have their own friends, who sometimes eat with them outside. This is especially true for teenage boys, who prefer to eat with their friends outside. 7.1% of the respondents mentioned that they did not have breakfast, while in the past they used to have it. Overall, 96.4% of the

study sample agreed with the statement that there has been a big change in family diet from past to present. These findings agreed with Al-Onaizi's study (1998) where most respondents 86.3% mentioned that there has been a change in the Saudi diet since the spread of fast food restaurants.

Table 4-10: Opinions of respondents regarding change in family's diet and dietary habits in the last 20 years.

Changes in diet.	Fr.	%	Changes in dietary habits	Fr.	%
Yes	221	71.3	Yes	194	62.6
No	83	26.8	No	110	35.5
No reply	6	1.9	No Reply	6	1.9
Total	310	100	Total	310	100

This table shows that 26.8% and 35.5% of the respondents thought that there have been no changes in their diet and dietary habits, while the majority of respondents 71.3% and 62.6% reported that their diet and dietary habits have changed over the last 20 years. It appears in this study that change in diet and dietary habits is taking place in a general context, as it has been pointed out above. But if one looks at the change from the point of view of respondents, gender difference is insignificant especially in dietary habits as shown in the following table:

Table 4-11 : Relationship between gender and changes in diet and dietary habits.

Gender	Change in diet.			Change in dietary habits.		
	Yes	No	Total	Yes	No	Total
Male	Fr 109 % 70.3	46 29.7	155 100	Fr 101 % 65.2	54 34.8	155 100
Female	Fr 119 % 76.8	36 23.2	155 100	Fr 100 % 64.5	55 35.5	155 100
Total	228	82	310	201	109	310
Chi.square = 1.658 D.F=1 P= 0.198				Chi.square = .014 D.F= 1 P= 0.905		

Table 4-11 tests the relationship between gender and change in diet and dietary habits whereas tables (1,2) , both indicate insignificant difference with the latter exhibiting no change were 65.2% and 64.5% for males and females respectively. This situation could be explained by the fact that social factors shaping social change in gender diet and dietary habits are nearly the same such as customs, traditions, religious values and social environment. Also Saudi family

members eat together most of the time. In addition to that, the survey was carried out in the same household husband and wife. Moreover, women are in total charge of preparing and cooking family's meals making them more likely to affect change in food. Change in diet and dietary habits in a society could be affected by age and its various categories, because of each age category's views and willingness to accept change. The following table stresses this point.

Table 4-12: Relationship between age of respondents and change in diet and dietary habits

Age	Change in diet.			Change in dietary habits.				
	Fr	Yes	No	Fr	Yes	No	Total	
Under 40	%	152 75.6	49 24.4	201 100	Fr	134 66.7	67 33.3	201 100
Over 40	%	68 62.4	41 37.6	109 100	Fr	66 60.6	43 39.4	109 100
Total		220	90	310		200	110	310
Chi.square = 6.010 D.F=1 P= 0.014				Chi.square = 1.155 D.F= 1 P= 0.283				

Table 4-12 tests the relationship between age and change in diet and dietary habits which indicates that there is a significant difference between age and change in diet where those under 40 are more likely to report a change in diet than those aged over 40. However both the under and over 40 age groups report changing their dietary habits less than changing their diet. Maybe because change in dietary habits take longer time than change in diet. The above finding is corroborated by Al-Shagrawi *et al's* study (1999) mentioned earlier. In this situation it appears that the young generation is more likely to change and accept change in their daily life since they are greatly influenced by socio-cultural pressures. While the older generation only slightly withstands change. Also, old people tend to resist changes which are closely related to tradition and customs.

In Saudi society many families depend on expatriate workers as housemaids, cooks and restaurant workers, who come from different cultures. They work mostly in kitchens and prepare meals for their hosts. They might introduce food styles and cuisines of their countries which were not earlier known 62.2% of the survey sample agreed strongly with the statement that foreign workers inside and outside houses have a great effect on bringing many kinds of foods, which were unknown to the Saudi family before. Also, travelling abroad has a great impact on Saudi

people's food choice and dietary habits. Through travel, the Saudi people are in contact with other people from different cultures, which has great effects on their food and dietary habits. 73.6% of the respondents agreed with statement 54 (Appendix A) that travelling abroad had a great effect on the change in the Saudi family's diet. Dietary habits attributed to this influence were:

- 1- Use of forks and spoons instead of using hands.
- 2- Use of dining tables instead of eating while sitting on the floor.
- 3- Eating from separate dishes instead of a communal tray.
- 4- Use of open buffets at parties.

Saudi students who study in foreign countries have contact with other families and people for a long time. They may be in contact not only with people of the country where they study, but also with people from other countries who are studying with them in the same area. Some Saudi people are, therefore, exposed to other cultures and ways of life which are different from their own. Many students return to their country full of admiration and appreciation for the society in which they have been living. That admiration can be manifested in various forms. One of them is by adapting to a new diet and dietary habits as shown in table 4-13.

Table 4-13 The relationship between travelling abroad and changing in respondents' diet and dietary habits.

Travelling abroad	Change in diet.						Change in dietary habits.					
	Yes		No		Total		Yes		No		Total	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%
Yes	96	43.8	111	50.7	207	94.5	90	42.3	114	53.5	204	95.8
No	4	1.8	8	3.7	12	5.5	3	1.4	6	2.8	9	4.2
Total	100	45.6	119	54.4	219	100	93	43.7	120	56.3	213	100

Table 4-13 shows that travelling abroad was thought to have changed diet and dietary habits by 43.8% and 42.3%, respectively, while 50.7% and 53.5% of the respondents reported that travelling abroad had no effects on their diet and dietary habits. Where there has been no

change, this may be explained by the fact that some Saudi people have a very strong attachment to their traditional food, culture, traditional values and customs. This finding is similar to Basha's study 1988 where he found that 'changes in Saudi students dietary habits were found to be significantly related to marital status. Single students were more likely to adapt American dietary patterns than married students. Social integration with Americans correlated with the adoption of American dietary patterns' (Basha 1988:1) Changes in respondent's diet and dietary habits as a result of their travelling abroad are represented in the following table:

Table 4-14 Distribution of respondents according to the change in their diet and dietary habits.

Type of Change.	Fr.	%
Change in the kind of food.	93	30.0
Change in the way of cooking.	73	23.5
Change in the way of eating.	59	19.0
Change in the using new eating tools.	44	14.2
Change in eating time.	39	12.6
Other	2	.6
Total	310	100

This table reveals that 30% of the respondents thought that changes in their food had occurred as a result of travelling abroad. Many kinds of non-traditional food from different countries have now become part of the Saudi table, besides traditional food. Also, many people have started eating fast food either in restaurants or at home. The second change is in the way of cooking, 23.5%. Saudi people today cook their food in different ways. Eastern and western cuisines have become an integral part of Saudi cuisine. The way of eating came in the third category, 19%. The change to using eating tools came to the Saudi table because of the influence of travelling abroad and foreigners who are working outside and inside houses, such as cooks and housemaids from different countries, according to 14.2% of the respondents. These findings answer the study's question: "What is the effect of travelling abroad on family dietary habits and food choice ?" Moreover, migrant people have established their own small shops and restaurants so that they can continue to eat their own food and introduce their food cuisine to

other people in society. Immigrants try to keep their own food and eating habits as long as possible in spite of strong pressures to change them. In the Gulf countries immigrants have therefore influenced food consumption by introducing many food habits to the region. The influence of immigrants differs from one country to another in the region according to their nationalities and their number in each country. The wide use of spices in cooking and availability of various kinds of spices in the market are a most striking example of the influence of Indian cooking. In Saudi Arabia, Lebanese, Syrian and Palestinian influences are observed as several foods from these areas have been introduced. This finding is similar to Gibbon's study (1988) where he found that 'the dietary habits of Saudi population have been influenced by the influx of foreign workers into the country' (1988:1). Effects of travelling abroad and foreign workers living in the Kingdom on diet and dietary habits become an international phenomenon and can be seen as a feature of food and cuisine globalization.

The findings of the open question: What are the changes in your family's diet? were as follows: 29.3% of the survey sample acknowledged that their consumption of fatty food had increased, and 6.2% used canned and frozen food more than in the past. 26.8% of the respondents stated that their diet contained more sweet food than it did 20 years ago. 18.7% of the respondents reported that they ate fast food meals which they did not know of 20 years ago. 31% of the survey sample acknowledged that there had been an increase in carbohydrate in their diet. Increase in meat consumption was reported by 8.3% and increase in fruit and vegetables consumption by only 7.7%. Respondents whose consumption of sea food had increased were 3.2%, while consumption of soft drinks had increases in the diet of 17.4%. Only 1% identified drinking fresh fruit juice as a change. These findings indicated that people themselves think that there are many changes in the Saudi family diet such as increases in consumption of fat, carbohydrate, dessert, sweets and soft drinks which may have negative health effects on family members. Al-Jassir confirmed this point in the following:

'the emphasis of the commercial promotional campaigns on the fast food restaurants has led to the change of the dietary habits of the Saudi society. Now there is an increasing demand for these types of food along with a decline to the traditional home made food. This in turn has led to the increase of inspection responsibilities on the part of the respective authorities to conduct regular inspections and visits to these restaurants and their working staff who are also on the increase. Therefore, many violations are detected in respect of the personal hygiene of the staff and the served food items. Is natural that we experience cases of food poisoning during hot summer season' (1997: 1)

Moreover, Al Saeedi confirmed this theme with more specific detail as in the following:

'fast food restaurant and stores have spread very fast in the Saudi society. These items of food include meat with high fat such as hamburger of different types including chicken, meat, fish. Pizza, broasted, fried chips and shawirma, in addition to the additives including mayonnaise and spices and hot sauce, which improve the colour and taste of the food and appetite for these types of food especially for young people and children. These fast meals are also served with soft drinks with high calories that will eventually lead to obesity and cardio-vascular diseases. These meals also contain high levels of sodium chloride that cause potential hypertension and possible cardio-vascular diseases and renal impairment. It must be noted here that fast foods are poor in vitamins and minerals that help the body to control the assimilation of fats and therefore cause the body to lose important components of vitamins and mineral salts. In addition, low intake of vegetables and fruits causes unbalanced diet, which ultimately reflects on the health of the individual. It is established fact that improper dietary habits that developed from early childhood in addition to other inherent factors may lead to possible cardio-vascular diseases and diabetes' (1997: 8).

The Arabian Gulf countries have similar social-economic and geographical characteristics and common nutritional problems. Musaiger (1997) gave a detailed summary account of food and nutritional patterns in Gulf countries where there has been a dramatic shift from traditional nutritional patterns to fast, canned and frozen food, with adverse effects on people's health because these foods contain a reduced amount of essential nutrients. Also, Sebai stated that:

'economic and social changes experienced by the Saudi society have led to the alteration of the life style of some individuals. Some of these changes are positive while others are negative of course. On the positive side, the diseases of underweight are on the decline. However, on the other hand, the negative side of the matter entails many health problems such as diabetes, high cholesterol level, gall bladder problem and obesity as well as other impairments related to dietary system. This issue necessitates that dietary awareness of the public is considered to be an imperative issue'(World of Dietetics, issue no. 1, 1998:16).

Effects of Income:

As noticed in Chapter Two, income of a high and low nature may have an important impact and determinant factor on types, quantity and quality of food which different groups of people can eat. Income is considered as one of the major factors in changing food and dietary habits.

Table 4-15 Level of income of respondents and changes in family' diet and dietary habits in the last 20 years.

Level of Income.	Change in diet.			Change in dietary habits.				
		Yes	No	Total	Yes	No	Total	
Low	Fr	42	36	78	Fr	33	46	79
	%	53.8	46.2	100	%	41.8	58.2	100
Medium	Fr	64	17	81	Fr	53	27	80
	%	79.0	21.0	100	%	66.3	33.7	100
High	Fr	114	30	144	Fr	108	37	145
	%	79.2	20.8	100	%	74.5	25.0	100
Total		220	83	303	Total	194	110	304
Chi-Square = 18.590 D.F = 2 . P = < 0.0001					Chi-Square = 23.975 D.F =2 P = < 0.0001			

Change in diet and dietary habits become a common characteristic of Saudi society, in general, but more visible among high income categories in particular. In this respect, table 4-15 tests the relationship between level of income and change in diet and dietary habits whereas tables (1,2) both indicate a significant difference exists between level of income groups. Change in diet appears to be very conspicuous in all categories. But the medium and high level income groups are more likely to change their diet more than the low income group 79%, 79.2 and 53.8% respectively. When it comes to change in dietary habits respondents tend to change less than change in their diet in all categories. It is clear from the data that level of income influences the degree of change in dietary habits. Medium and high income categories are more likely to change than the low income group. 66.3% , 74.5% and 41.8% respectively. One might expect a lower income to be associated with less change in diet and dietary habits . Because, low income group may not be able to afford new types of foods or new eating tools. Also, low income people are usually less open to influence by mass-media and contact with other cultures either inside the country or outside. Moreover, more than two thirds of the study respondents 80.3% agreed with statement 59 (Appendix A) that high income has an effect on having a healthy diet. This finding is similar to Eley's finding (1999) 'there is a relationship between income and eating practices where lower income families focus on meals rather than on the individual value of individual foods, and

on cost and taste of food rather than its nutritional content. So the less healthy eating in low income groups may be a consequence of household income decreases involuntarily' (1999:1). In spite of this fact, it should be kept in mind that high income does not necessarily mean that there is a high positive effect on food choice and dietary habits. In other words, it might have a negative effect if it has been used irrationally.

Restaurants and fast food outlets are spreading rapidly in great numbers, especially in big cities and towns. These restaurants make big profits as a result of high demand on their services, especially fast food restaurants. The picture of changes in Saudi diet might be well manifested in the rapid growth of restaurants in the Kingdom as a whole and the city of Riyadh in particular. In this respect, the High Commission for the Development of Riyadh carried out three surveys 1986,1990 and 1996 about land usage in Riyadh. This study concerns only the numbers of restaurants which increased enormously between 1986 and 2001 as shown in the following table:

Table 4-16 Number of fast food restaurants, other restaurants and traditional food service places between 1986-2001

Type	A			B		
	1986	1991	1997	1999	2000	2001
Fast food restaurants.	681	1649	2375	3734	4842	7673
Other Restaurants.	1365	1361	1953	2232	2429	2602
Traditional food service places.	158	267	386	399	406	481
Total	2204	3277	4714	6365	7677	10756

A - High Commission for the Development of Riyadh 1986-1998: 1-5.

B - Municipality of Riyadh 1999-2002:1.

This increase could be seen as a sign of an increase of Saudi family diet dependency. The habit of buying ready-made food has become a common practice among many Saudi families. A study conducted by Balkhier (1989), revealed that '50% of the sample always buy ready made meals from restaurants, 35% sometimes and only 15% of the sample always preparing their meals themselves. The study also revealed that 80% of the sample prefer to buy their dinner meals, while 20% prefer to buy their lunch meals' (1989:65).

This deduction is also consistent with the study respondents' opinion where 93% agreed with statement 41 (Appendix A) that fast food restaurants have helped the increased consumption of frozen, canned and fried food by the Saudi family, which may have negative effects on health. This finding is similar to Abdurraheem's study where 99% of her study sample were consuming canned food daily. (in Al-Riyadh, 20/1/2002:6)

Table 4-17 Relationship between income and going to restaurants.

Level of Income	Do family members go to restaurants?			
		Yes	No	Total
Low	Fr	48	31	79
	%	60.8	39.2	100
Medium	Fr	60	22	82
	%	73.2	26.8	100
High	Fr	126	19	145
	%	86.9	13.1	100
Total		234	72	306
Chi- Square = 20.094		D.F = 2	P= < 0.0001	

Table 4-17 tests the relationship between level of income and whether families go to restaurants. A significant difference exists between levels of income groups. Going to restaurants becomes a fashionable trend for all income categories. Where more than half of each group did so. For instance, 60.8% of low income went to restaurants in spite of their limited economic means, may be because some families of this category are under pressure from their children to go to restaurants imitating their peers in other economic groups. Also fast food restaurants offer a variety of food and drinks affordable to different income groups. In addition to that, the higher the income the greater increase of people going to restaurants. This fact is well manifested in the above table 86.9%, 73.2% and 60.8% respectively. These variations can be explained by the fact that the low income group's affordability to go to restaurants is more limited than the higher income group. Meanwhile, people consider this habit as a fashionable behaviour as well as an entertainment mean and to meet their friends. We can conclude therefore, that

economic status is one of the most important factors effecting people's food choices. These findings could be used to answer the study question, "Does family income have any impact on family nutrition and dietary habits?" The lifestyle associated with more money and new opportunities has dictated the trend towards eating outside the home. Due to the economic and social changes encountered by society and the impact of other cultures including imitation of dietary habits of other nations, many people are beginning occasionally to have their meals in restaurants, as shown in the tables below:

Table 4.18 Distribution of respondents' going to restaurants.

Going to Restaurants.	Fr.	%
Yes	241	77.7
No	66	21.3
No Reply	3	1.0
Total	310	100

It is clear from this table that: more than two thirds, 77.7%, of the respondents had some meals in restaurants, while 21.3% never went to restaurants. This high percentage of respondents who are going to restaurants might be explained by the fact that nowadays people tend to be affected by the rush, easy speedy way of life which become a factual situation in many modern contemporary societies. Another feasible explanation of this trend could be because of women joining the labour force. Also, the desire to reject food habits of one's childhood and family or origin, either because they are too boring or as a direct act of rebellion in the face of parental authority over food choices, is one more reason to try new foods. Another is a desire to appear innovative and adventurous conforming to the "gourmand" model of constantly seeking new taste experience. This finding is similar to Balkhier's study 1989, and Al-Onaizi's study 1998 mentioned before (Chapter Two). And Monerah Al-Muhna's finding (2002) in her study about "*Saudi Society Nutritional Situation*" 'where more than 44 of Saudi people went to restaurants either once or twice a week, while 3% did so everyday' (cited in Al-Riyadh No. 12545. 29/10/2002:8) .This urban habit may not appear to be a healthy habit. And scientific investigations tend to confirm this fact, for example, Al-Saeedi (1997) mentioned before and Musaiger (1997) Obaid (1998) and Al-Sarraf (1998) which would be exposed later. The scientific dimension of this habit needs to be backed up by its social dimension, which will be looked at briefly later.

Table 4.19 Distribution of respondents according to their going to restaurants.

Going to Restaurants	Twice a week		Once a week		Once a month		Never		No Reply		Total	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%
Parents	17	5.5	32	10.3	80	25.8	146	47.1	35	11.3	310	100
Children	20	6.5	42	13.5	48	15.5	161	51.9	39	12.6	310	100
All family members	12	3.9	44	14.2	166	53.5	53	17.1	35	11.3	310	100

Table 4-19 reveals that the majority of respondents, parents, children and all family members, 25.8%, 15.5%, 53.5%, respectively, went to restaurants once a month, and more children went twice a week than did parents or all the family 6.5%, 5.5%, 3.9%. This may be due to the fact that children have more time and fewer responsibilities than their parents or other family members. Moreover, the younger generation may prefer eating in restaurants with their friends. Also this trend could be justifiable by the fact, that older generation tend to stick with their old way of eating traditional food. This result confirmed the finding in table 5-14. Having meals in restaurants, especially for the whole family, has become a new trend in Saudi society which was not seen in the past. This fact could be used to answer the study question, "How often do Saudi family members go to restaurants for meals?" The types of food usually ordered in restaurants are shown in the following figures: Grilled meat and chicken were first choice, 23.2%). Hamburger was second, 12.6%, French fries were third, 8.7%. Seafood was fourth, 6.5%. Rice and pasties shared the same percentage 5.5% as fifth. *Shawurma* and Chinese food were joint sixth 5.2%. Salad and appetizing food 4.5% joint seventh. Lebanese food 4.2% was eighth choice. Traditional foods were ninth 3.5%. Cooked vegetables and sweets were joint tenth 2.9%. Indian and Italian foods 2.3% and 1.9% respectively were the least favoured choices. These findings could be regarded as an indication of changes in Saudi diet, with new non-native foods being slowly added to the Saudi diet. Food consumption of fathers, mothers and children can be seen in tables 4-20, 4-21 and 4-22.

Table 4-20: Distribution of respondents according to father's consumption of non-traditional food.

Type of Food	Father's consumption of non-traditional food.							
	Once a week		Twice a week		Once a month		Never	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%
Hamburger	51	16.5	44	14.2	98	31.6	110	35.5
French Fries	121	39	55	17.7	80	25.8	49	15.8
Sandwiches	157	50.6	49	15.8	48	15.5	51	16.5
Stuffed and Fried Pies	60	19.4	41	13.2	112	36.1	92	29.7
Fried chicken	100	32.3	44	14.2	81	26.1	80	25.8
Donuts	17	5.5	23	7.4	102	32.9	163	52.6
Cake	40	12.9	33	10.6	141	45.5	91	29.4
Ice Cream	24	7.7	20	6.5	129	41.6	130	41.9

Table 4-21 Distribution of respondents according to mother's consumption of non-traditional food.

Type of Food	Mother's consumption of non-traditional food.							
	Once a week		Twice a week		Once a month		Never	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%
Hamburger	47	15.2	61	19.7	107	34.5	89	28.7
French Fries	139	44.8	80	25.8	71	22.9	25	8.1
Sandwiches	172	55.5	60	19.4	49	15.8	25	8.1
Stuffed and Fried Pies	83	26.8	54	17.4	106	34.2	65	21.0
Fried chicken	105	33.9	60	19.4	78	25.2	66	21.3
Donuts	23	7.4	36	11.6	109	35.2	141	45.5
Cake	53	17.1	54	17.4	147	47.4	54	17.4
Ice Cream	29	9.4	44	14.2	144	46.5	89	28.7

Table 4.22 Distribution of respondents children's consumption of non-traditional food.

Type of Food	Children's consumption of non-traditional food.							
	Everyday		Once a week		Once a month		Never	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%
Hamburger	18	5.8	134	43.2	90	29	53	17.1
French Fries	56	18.1	189	61.0	47	15.2	7	2.3
Sandwiches	187	60.3	79	25.5	25	8.1	8	2.6
Stuffed and Fried Pies	18	5.8	95	30.6	124	40	63	20.3
Fried chicken	22	7.1	123	39.7	103	33.2	52	16.8
Donuts	9	2.9	56	18.1	132	42.6	104	33.5
Cake	16	5.2	80	25.8	159	51.3	45	14.5
Ice Cream	37	11.9	99	31.9	134	43.2	29	9.4

Looking at these three tables, it is clear that Sandwiches, French fries, Hamburger, Fried chicken, stuffed and fried pies and cake are the most favoured non-traditional foods for Saudi people. These findings agreed with King Saud University female students' study (1993) which confirmed that among non-traditional foods, the most popular are French fries, pizzas and hamburgers. These foods have low nutritional value and may constitute a potential risk to general health due to the high rate of calories, fats and salts. These ingredients eventually increase the level of cholesterol in blood. Edmond Obaid confirmed this point 'the consumption of fast food meals is the nearest way for developing cancer and cardio-vascular diseases due to the fact that they are very rich in fats and animal products' (Edmond Obaid, Al-Hayat, No. 13031 7/11/1998:4). This fact came as a support of Musaiger's (1997) findings 'studies revealed that 35% of cancerous diseases are of nutritional origin due to the existence of cancerogenic agent in canned food stuff, artificially coloured and preserved food items' (1997:165). In addition to that, Al-Suleeman reported in Al Riyadh newspaper that. The head of cancer unit in King Faisal Specialist Hospital in Riyadh acknowledged that 'cancer rate in Saudi Arabia is four times higher than the world rate'. This fact is too serious and hard to be ignored. This acute situation is quite evident in the city of Jeddah where about 4,500 child cancer cases were reported in (2001) by Sami Felimpan, the pediatric consultant in National Guard Hospital in Jeddah. The reporter highlighted this health critical situation. It is alarming and this situation might be attributed to several factors. For the purpose of this study four reasons are considered crucial to be put forward as follows:

- Excessive usage of food chemical fertilizer, insecticide, food additives and colours.
- Contamination resulting from environmental pollution and unhygienic methods of preparing cooking and storage of food and drinks.
- Weak food regulations and poor supervision contribute to the increase of food rules violation.

- Excessive usage of bromate potassium in bread and pastries. (Al-Riyadh No. 12381. 18/5/2002:48).

Comparing the above three tables with table 4.5 it appears that traditional Saudi food is declining, while non-traditional food is increasing. This finding is similar to Al-Shagrawi's study (1999) mentioned in Chapter Four. This change in the Saudi dietary behaviour could be attributed to many causes such as urban life which becomes an important feature of Saudi society. Also food fashion and globalization of food cuisine might be considered two of the causes of this new trend. Economic affordability to buy these new foods and the effect of mass-media and modern technology make it possible for this change to take place. These findings could be used to answer the study question "What are the effects of food fashions on Saudi people's food choice ,diet and dietary habits?" Al-Sarraf stated that:

'in (1991) there were 1649 fast food restaurants in Riyadh with 75% of their customers Saudis. Food served by these restaurants constitutes a potential risk to general health due to the high rate of calories, fats, and salts. These ingredients eventually increase the level of cholesterol in blood. Each meal has 800 milligram of cholesterol while the body's need is only 200 milligram of cholesterol daily. These meals constitute 55% of fats in burgers, fried chicken and potatoes.' (in Al-Sharq-Al-Awsat, No. 7320, 13/12/1998:27).

Effects of Modern Technological Appliances:

Affordability of new modern technological appliances might be considered as one of the more indirect factors contributing to change in the diet of Saudi society. This is apparent in responses to statement 42 (Appendix A) that more than three quarters of the respondents 83.9% agreed that the wide spread availability of frozen and canned food encourages families to consume them more than natural and fresh food. Availability of a variety of goods including cooking utensils and devices tempt people to acquire various modern cooking instruments and equipment that help women to make a variety of foods and to serve new kinds of food that were not known before to Saudi society. The following tables illustrate this point.

Table 4.23 Distribution of respondents according to cooking appliances used by the family.

Enumerate the following to show the importance of their usage.												
Number	Electric Oven		Gas Oven		Pressure Cooker		Microwave Oven		Various Frying Utensils		Grills	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%
1	34	11.0	252	81.3	24	7.7	23	7.4	50	16.1	24	7.7
2	46	14.8	21	6.8	22	7.1	32	10.3	97	31.3	12	3.9
3	8	2.6	9	2.9	26	8.4	15	4.8	60	19.4	44	14.2
4	11	3.5	3	1.0	19	6.1	14	4.5	30	9.7	34	11.0
5	12	3.9	7	2.3	14	4.5	14	4.5	11	3.5	25	8.1
6	9	2.9	1	.3	15	4.8	16	5.2	4	1.3	8	2.6
No Reply	190	61.3	17	5.5	190	61.3	196	63.2	58	18.7	163	52.6
Total	310	100	310	100	310	100	310	100	310	100	310	100

Table 4-23 reveals the pattern of life in the Saudi family as far as use of cooking appliances is concerned. It illustrates that microwave oven is little used by Saudi families. There are a number of possible reasons for this:

- People have heard about negative health effects and the dangers of its misuse.
- It is expensive to buy.
- Many Saudi women, especially older women and housemaids, do not know how to use it.
- Recently introduced to the society.

The preferred cooking appliance was gas oven, 81.3%. Second, 31.3%, came various frying utensils. In this respect, it is understandable that many people prefer fried food, in spite of its negative health effects that it is fatty and the food loses many of its vitamins with too much heating because they are used to it, especially during the fasting month of *Ramadan*. This indicates that many Saudi people may be unaware of negative effects of fatty food on health. Grills came in third place, 14.2%. Electric oven was relatively little used, as was pressure cooker, perhaps because many Saudi women and housemaids do not know how to use them or are afraid of them. Gas oven seems to be the most used cooking appliances, partly perhaps because it is cheaper than other appliances. The main methods of Saudi cooking is shown in the table below:

Table 4-24 Distribution of respondents according to the main methods of cooking.

Methods of Cooking	Every day		Twice a week		Once a month		Never		No Reply		Total	
	Fr.	%	Fr	%	Fr	%	Fr.	%	Fr.	%	Fr.	%
Boiling	292	94.2	8	2.6	5	1.6	2	.6	3	1.0	310	100
Grilling	12	3.9	73	23.5	140	45.2	82	26.5	3	1.0	310	100
Steam Cooking	6	1.9	10	3.2	49	15.8	245	79.0	0	0.0	310	100
Frying	69	22.3	160	51.6	69	22.3	11	3.5	1	.3	310	100
Microwave	23	7.4	14	4.5	28	9.0	244	78.7	1	.3	310	100

Table 4-24 reveals that boiling in water is the main method of cooking food for the majority of respondents, 94.2%, which is a good sign because boiling food is more healthy than frying food, which was the second, 22.3%, most used method in everyday cooking. Respondents may have preferred frying food because it is tasty or easy and quick, but they may be unaware of its negative health effects. Microwave was third method of cooking food, 7.4%, while 78.7% never used it. Perhaps people believe that it is harmful for health. Grilling method is fourth used by 3.9% of the respondents, every day, while 26.5% never used it. Steam cooking was the least used method of everyday cooking, 1.9%, while the majority of respondents, 79%, never used it. These results confirmed the findings in table 4.23. Also, they agreed with the study conducted by female students in King Saud University (1993) which confirmed that cooking in water was the most popular method used by students, while those who preferred grills and foods prepared by steam or microwave were fewer in number. Also 50.9% of the study sample disagreed with statement 23 (Appendix A) that using a microwave for cooking does not affect health. Frying foods and adding of oil to dishes have become common as shown in the following table, in contrast to traditional dietary practices.

Table 4-25 Distribution of respondents according to the type of oil they use in cooking.

Type of Oil	Every day		Twice a week		Once a month		Never		No Reply		Total	
	Fr.	%	Fr	%	Fr	%	Fr.	%	Fr.	%	Fr.	%
Vegetable Oil	282	91.0	23	7.4	2	.6	3	1.0	0	0.0	310	100
Animal Fat	7	2.3	41	13.2	85	27.4	177	57.1	0	0.0	310	100
Butter	6	1.9	65	21.0	111	35.8	126	40.6	2	.6	310	100

Table 4.25 illustrates that the majority of the study sample, 91%, used vegetable oil every day in their cooking. A minority of respondents, 2.3%, used animal fat while 57.1% never used it. Butter was the least used in daily cooking, 1.9%, and many respondents, 40.6%, never used it. It is clear from the table that vegetable oil was the preferred oil in cooking food. This may be because it is more available in the market and cheaper than other fats or that it is seen as healthier than animal fat, which contains high percentages of cholesterol and is more difficult to digest. These findings could be regarded as an indication of respondents' positive dietary awareness, and agreed with King Saud University female students' study (1993) which confirmed that almost all the sample of female students used vegetable oil in their cooking. The types of household cooking oil usage will be determined by its members' individual preferences. Reasons given for the type of cooking oils are shown in table 4-26.

Table 4-26 Distribution of respondents according to the reasons for preferring of the type of oil .

Reasons of its use	Vegetable Oil		Animal Fat		Butter	
	Fr.	%	Fr.	%	Fr.	%
Cholesterol is low	269	86.8	3	1.0	2	.6
Tasty	88	28.4	123	39.7	157	50.6
Lower price	75	24.2	6	1.9	5	1.6

This table shows that the majority of the survey sample, 86.8%, preferred vegetable oil because of its low cholesterol, while only 28.4% preferred it for its taste. Lower price was the least popular reason, 24.2%. These findings could be regarded as an indication of positive

dietary awareness about harmful and negative health effects of cholesterol on health. Respondents who preferred using animal fat, 39.7%, and butter, 50.6%, did so because they found them tasty. They may be unaware of the high level of cholesterol they were consuming.

In addition to, changes in ways of cooking, dietary practices are also influenced by the mode of final consumption. For example, extravagant parties, feasts and festivals have become a feature of Saudi social life. When a party is held at home, the housewife has to start preparing for several days in advance, and keeps the cooked food refrigerated until the party day. As a result, some of its nutritional value may be lost. The following table highlights this point.

Table 4-27 Distribution respondents according to their opinion about features of parties, feasts and festivals.

Number	Respondent's opinion about features of parties, feasts and festivals.	Fr.	%
1	Diversified and extravagant types of food.	267	86.1
2	Psychological, physical and financial burden to the hosts.	245	79.0
3	Plenty of carbohydrates and fatty food.	237	76.5
4	Excessive consumption of soft drinks.	219	70.6
5	Taking dinner late at night.	214	69.0
6	Imitation, extravagance and superficiality.	193	62.3
7	Many sweets and confectioneries.	187	60.3
8	Dependency on restaurants and hotels in preparing and serving meals.	186	60
9	No concern to serve healthy food.	145	46.8
10	Offering of canned juices rather than fresh juices.	133	42.9

The study respondents' opinion about common dietary practices in social and festival parties could be taken and treated from a wider spectrum. Table 4.27 in its entirety is a vivid illustration and description of what people think of dietary habits and practices in Saudi society. One has to bear in mind that the respondents' opinion come out as a result of their own practices and their observations of practices by others. It is a participant observation *per excellence*. Analysing these findings and interpreting its implications in Saudi social context at large, and the study sample in particular, a common feature of all these dietary habits and practices is

exaggeration, extravagance and plentitude 86.1%. This feature can explain that societal habits and social class impose upon individuals to appear beyond their social class. They must behave and appear higher than their own social class regardless of whether they can afford it financially or not. In actual fact, this social pressure is enormous and its psychological, social and financial consequences on individuals are beyond one's imagination. There seems to be a paradoxical situation within Saudi society. It may be looked at as a contradiction on one hand, people sometimes do not abide nor adhere to strict rules, regulation and teachings of their own faith. But on the other hand, they tend to abide and follow their societal customs regardless of its contradictions to Islamic teachings. That social customs and obligation impose psychological, physical and financial burdens upon individuals is also obvious according to 79% of the respondents. In the end, they yield to societal pressure. It is not only that, but also their dietary behaviour is partly imitating the others 62.3% from the three percentages mentioned above, it is possible to say that societal customs and rules may overcome other factors in the society - at least in the study respondents' opinion - The upper echelon of Saudi society does not seem to be affected financially. It is the middle and low echelon who feel the pinch. The study respondents' attitudes towards health matters had shown that hosts were only concerned offering to their guests plenty of carbohydrates and fatty foods 76.5%. Furthermore, they tend to encourage excessive consumption of soft drinks 70.6%. The little concerned attitude toward healthy food appear quite obvious in their response in describing that parties and festivals tend to include many sweets and confectioneries 60.3%. Also, these parties, or those who are in charge of them, were not concerned to serve healthy food 46.8%. And finally, offering canned juices rather than fresh juices might indicate that people tend not to have a positive health attitude 42.9%. The above five features of the study respondents' opinion of dietary behaviours in social parties and festivals could be taken as social reality. Therefore, health authority, dietitians and nutritionalists ought to be concerned in order to formulate health and dietary

policies to address this unhealthy situation and conditions. These findings are consistent with those of Al-Othaimen (1991) who indicated that:

'an ordinary celebration would have a table full of different dishes with a whole lamb at the centre table. Parties celebrating marriage ceremonies last for 2-3 days, where each day 10-15 lambs are slaughtered, plus large servings of an array of elaborate dishes of numerous concoctions, from saucy meat dishes to rich and colorful pastries and other desserts' (1991:240).

Exaggeration and extravagancy in food and drinks due to imitation and superficiality during social parties are acknowledged by all study respondents. But, when it comes to look to the gender's view and opinion in this respect, as it is shown in table 4.28, males complain of accessiveness, imitation and superficiality in parties and festivals 45.4% and 32.9% respectively, more than females 40.6% and 29.4% respectively. Justification of this fact could be that female's contribution in the family budget and expenditure is low indeed, where only 7% of the Saudi labour force are females as it has been mentioned in Chapter One. Moreover, these features tend to be more conspicuous in Saudi society and more specifically among females. Economic affordability and plentitude of food services and premises tend to encourage the wide spread of these features in Saudi society.

Table 4-28 Distribution of respondents according to gender's opinion about some features of parties and festivals.

Features	Male		Female	
	Fr.	%	Fr.	%
Exaggeration and extravagancy in food and drinks.	141	45.4	126	40.6
Imitation and superficiality.	102	32.9	91	29.4

For Saudi people the great emphasis placed on socializing may mean that people may go quite frequently to parties with their close or immediate family as part of their social obligations and duties. In addition to that, parties are considered as entertainment, recreational and social activities, the most available form of recreation for people, especially in the central region of the Kingdom, as shown in the following table.

Table 4-29 Distribution of respondents according to the family going to dinner invitation.

Going to dinner invitation / Family Members	Twice a week		Once a week		Once a month		Never		No Reply		Total	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%
Father	31	10	66	21.3	168	54.2	36	11.6	9	2.9	310	100
Mother	19	6.1	49	15.8	210	67.7	31	10	1	.3	310	100
All family members	11	3.5	46	14.8	214	69	34	11.0	5	1.6	310	100

Table 4-29 reveals that going to dinner invitation once a month is the most common for all fathers, mothers and whole family, 54.2%, 67.7% and 69% respectively. And the next in frequency was once a week invitation, 21.3%, 15.8% and 14.8%. It is clear from this table that fathers went out for dinner more than mothers and all family members whether once or twice a week. This may be due to the fact that fathers have more time than mothers who are busy with their children and family responsibilities. Also, men have more freedom of movement than women who are not allowed to drive cars. However, data suggests the general importance of parties and social eating in Saudi Arabia. Such habits could be seen as a sign of hospitality and social solidarity on the one hand, but, it might also be regarded as a warning sign of future diet and health problems on the other hand, because of excessive consumption of fatty sweet and starchy foods as shown in table 4-27. Also, the survey reveals that more than two thirds 85.8% of the respondents agreed with statement 49 (Appendix A) that nowadays Saudi families consume starches, fats and sweet food more than fruits and vegetables.

Conceptions of a healthy diet and dietary practices:

People's ideas of healthy eating could be looked at as simple as Keane put it for the respondents in her study in the U.K.: 'healthy eating was largely to do with achieving and maintaining strength' (1997:173). Adequate nutrition is essential to proper body function and freedom from numerous diseases associated with excesses and deficiencies in vitamins, minerals, protein, carbohydrates and fats. Nutritional needs vary for each individual, depending

upon age, sex, weight, metabolism and lifestyle. In this study respondents were asked, "What is the healthy food in your opinion?" The answers are displayed in table 4-30.

Table 4-30 Distribution of respondents' opinion about healthy food.

Food Groups.	Fr.	%
Vitamins.	230	74.2
Proteins.	158	51.0
Carbohydrates.	114	36.8
Milk and Dairy Product.	86	27.7
Sweets.	42	13.5
Fats.	25	8.1
Dietary fibre and water.	17	5.5

Table 4-30 shows that the majority of respondents, 74.2%, mentioned that healthy food should include vitamins. Second proteins, 51%, while third was carbohydrates, 36.8%. Milk and dairy products fourth 27.7%, sweets were fifth, 13.5%. Fats sixth, 8.1%, dietary fibre and water were the least, 5.5%. These figures could be regarded as an indication of positive health awareness of the respondents about nutrition and healthy diet. Also it could be seen as a sign of people's dietary and health consciousness. However, although people are aware of what a healthy diet is, in practice they may not follow it. There may be a cultural lag where people know what a healthy diet is but do not act accordingly. For example, Caplan discussed Chapman and Maclean's study of eating patterns of Canadian teenagers who found that:

'they divide food into two categories: junk food and good food. The latter is associated with family meals and the domestic setting. the former with peer groups and fun. Thus, even though they are aware that junk food is not good in a health sense (as they express concern about weight and skin problems which flow from its consumption) nonetheless they do eat it because of what it represents: Freedom from parental restraint and good times with their friends' (Caplan 1997:6).

Also Keane suggests that ' healthy eating advice is indeed rather hard to swallow and that people do not feel they are getting the information that they deserve' (1997:190).

Table 4-31 Distribution of respondents according to their opinion about Saudi diet.

To what extent do you think Saudi family diet is proximate to the balanced diet?	Fr.	%
Greatly.	19	6.1
Not so greatly.	165	53.2
Far from (ideal) balance diet.	48	15.5
Mostly harmful to health.	47	15.2
Do not know.	31	10.0
Total	310	100

Table 4-31 for example, shows that the majority of respondents, 53.2%, thought that food consumption of the Saudi family does not approximate a balanced diet. 15.5% believed that it is far from a balanced diet. Those respondents who thought it is harmful to health were 15.2% only, few 6.1%, thought it greatly approximates a balanced diet. It is clear from this table, therefore, that 30.7% thought that the Saudi diet is either far from a balanced diet or harmful to health, which could be seen as a sign of the need to improve public dietary awareness. It appears that Saudi families tend to consume certain types of food quite constantly like rice, bread, fats and sweets, but their nutritional values may not be seriously considered. Statement 53 (Appendix A) confirms this point, where more than two thirds of the study sample 79.4% thought that Saudi families are interested in taking new foods regardless of their nutritional values, either because they may be unaware of their nutritional value or due to prevalent customs and habits. Most respondents 89.3% agreed with statement 52 (Appendix A) that customs and tradition have a major influence on family diet. However, ignorance of a balanced diet is not only manifested on large social occasions, but also, in the every day family diet for example, milk and dairy products are of great nutritional value, but these products appear to be consumed less by the younger generation. In this kind of situation one could expect that deficiency of calcium may emerge. Unbalanced diet and other factors lead to iron deficiency and anaemia, which could

become a health problem in Saudi society, especially among pre-school children and teenage girls. The Annual Health Report 1994 and 1999 statistics for iron deficiency anaemia among Saudi patients at Health Centres (MOH) show an increase of 67,925 patients between 1994 and 1999 as shown in table 1-7. Another sign of anaemia as a health problem is demonstrated in a study conducted by Sulaiman Al-Shehri in girls' schools in Riyadh showed that ' 40.5% of the sample between the age of 16-18 are suffering from anaemia' (in Resalat Al-Jameah Newspaper No. 651:11). Also, a study about Nutritional profile of Saudi Primary School Girls in an urban region, based on 285 primary school girls from the Urban Area of Thugba (Al-Khobar, in the Eastern Province of Saudi Arabia) showed that ' of the study group 26.4% had anaemia, and 9.2% were infested with one parasite or more, and anaemia was common in those harboring infestations' (Rasheed *et al.*, 1989:371). Reem Al-Nashar, a dietitian, King Faisal Specialist Hospital, said that 'some diseases are widely spread in the Kingdom due to an unbalanced diet . These diseases include anaemia ,which is considered as a common health problem, diabetes, obesity and cardio-vascular diseases, especially during the last twenty years due to the increase of calories intake and low physical exercise' (in Al- Riyadh, No. 11101, 15/11/1998: 17).

Another negative dietary habit, which is a particular feature of villages and in the desert areas, is the consumption of goat's, sheep's, cow's and camel's milk without boiling it. In practical terms 20% of the study sample agreed with statement 15 (Appendix A) that it is not harmful to health to drink unboiled fresh milk . Also, the following table shows this point.

Table 4-32 Distribution of respondents according to drinking unboiled fresh milk.

Drinking unboiled fresh milk	Fr.	%
Always	60	19.4
Sometime	52	16.8
Rarely	36	11.6
Never	159	51.2
No Reply	3	1.0
Total	310	100

Table 4.32 might reveals a specific dietary habit which is worth to be taken into account, where one has to draw a picture of Saudi drinking habit. This habit is drinking unboiled fresh milk. This study found that 36.2% of respondents admitted that they drank unboiled fresh milk always or sometimes. This is a critical matter of the incidence of registered brucellosis cases increased from 488 in 1985 to 8373 cases in 1988 as shown in table 4.33.

Table 4.33

1985	1986	1987	1988
488	2301	5224	8373

(Annual Health Report, Ministry of Health 1989:6)

Also , see Appendix D-16)

This high increase of brucellosis in the kingdom between 1985 and 1988 was felt by most of society and it would appear that increased awareness of the problems has led to improved hygienic practices and a subsequent improvement in health. This is suggested by the fact that ten years later the Annual Health Report 1998 indicated that there had been a continuous decline, within the last ten years, in the incidence of brucellosis from 72.08 cases per 100,000 in 1988 to 30.66 per 100,000 in 1997 (1998:32) however in 1999 the number increased to 31.15 per 100,000. (Annual Health Report 2000:37).

Table 4-34 Distribution of respondents according to washing fruits and vegetables before eating.

Washing fruits and vegetables before eating.	Fr.	%
Always	300	96.8
Sometime	6	1.9
Rarely	2	.6
Never	1	.3
No Reply	1	.3
Total	310	100

This table shows that nearly all respondents regularly washed fruits and vegetables before eating them, which is an indication of their health awareness of the harm that may result from eating unwashed fruits and vegetables.

Another issue explored by this research was respondents' awareness of the link between diet and health, where most of the study sample 86.2% agreed with statement 51 (Appendix A) that diet of the Saudi family is one factor that may cause some diseases like diabetes, hypertension, heart diseases and arteriosclerosis, etc. This point is shared by Musaiger (1997) who indicated that:

'nutrition is the primary factor that leads to hypertension. Increased portions of salt and fatty foodstuff and other contributing food ingredients are responsible, among other factors, for the increase of hypertension. Statistical reports revealed that the rate of hypertension in Egypt is 20% while in Kuwait is 39%, in Saudi Arabia the rate is 26%' (1997:142-3).

Moreover, the respondents were asked about the effects of changes in Saudi diet. Their opinions are represented in the following tables.

Table 4-35 Distribution of respondents according to their opinion about changes in Saudi family's diet.

Do you think changes in Saudi family diet causes many diseases?	Fr.	%
Yes	251	81.0
No	14	4.5
Don't know	44	14.2
No reply	1	.3
Total	310	100

Change in the Saudi society is quite conspicuous in all levels and in every aspect or feature of the society, with Saudi diet as no exception. Since one of the main objectives of this study is to explore and examine the effects of changes in diet and dietary habits on the health of the Saudi family, then resorting to many individuals in the society and asking opinion and vision about consequences of change, either positively or negatively, might help to formulate an accurate picture of the effects of change in diet. Thus 81% of the respondents thought that changes in Saudi diet cause many diseases. More than two thirds of the respondents appear to be aware of negative side aspects of the changes as far as their health is concerned knowing or acknowledging the problem might be considered a step forward in the right direction solving it on the one hand, but on other hand, it could be seen as a dangerous sign in the realm of health

condition in the society. Diseases caused by changes in the Saudi family diet in the respondents' view are explained in more detail in table 4-36.

Table 4-36 Distribution of respondents according to their opinion about unhealthy results from changes in Saudi family diet.

Unhealthy Results.	Fr.	%
Increase of obesity among children and adults.	231	74.5
Increase of tooth decay.	218	70.3
Increase of diabetes mellitus.	217	70.0
High blood cholesterol.	199	64.2
Increase of cardiac and cardiovascular diseases.	173	55.8
Increase of gastroenterological diseases.	145	46.8
Hypertension or hypotension .	135	43.5
Anaemia.	128	41.3
Increase of malnutrition diseases.	117	37.7

Demonstrating specific details concerning dangerous incidences or occurrences of diseases which may be caused by changes in the Saudi diet would help us to understand the nature of these diseases which are related to diet. Not only that, but also it provides us the full magnitude of the prevalence of these diseases in Saudi society. The study respondents' recognition of the fact of the occurrences of illnesses resulting from changes in people's diet could show the seriousness of health critical situations and conditions in the society. Their recognition of the increase of various diseases is well manifested and distinguished from their answers as follows: Obesity 74.5% , tooth decay 70.3%, diabetes mellitus 70%, high blood cholesterol 64.2%, cardiac and cardiovascular diseases 55.8%, gastroenterological diseases 46.8%, hypertension or hypotension 43.5% anaemia 41.3% and malnutrition diseases 37.7%. These percentages not only give us an indication that these diseases are quite evident and well felt by the society at large, but also, their occurrences in the society appear to be unusual in the extent of increase. Moreover, one can not ignore the fact that this unhealthy feature ought to be borne in mind in future health and nutritional national policies . In the meantime, thinking positively about respondents

acknowledgement of unhealthy results of their new diet and dietary practices might be considered a step forward in contemplating to solve them.

Table 4-37 Distribution of occurrence of illnesses in the respondents' families.

Is any person in your family suffering from any illnesses?	Fr.	%
Yes	201	64.9
No	103	33.2
No reply	6	1.9
Total	310	100

Table 4-37 shows that more than half of respondents, 64.9%, reported that some of their family members were suffering from illnesses. This finding could be seen as an alarming and warning sign. The nature of the illnesses are exposed in detail in the following table:

Table 4-38 Distribution of respondents according to their prevailing illnesses.

The prevailing illnesses	Fr.	%
Diabetes mellitus.	80	25.8
Asthma.	73	23.5
Hypertension.	69	22.3
High blood cholesterol.	43	13.9
Anaemia.	40	12.9
Gastric Ulcer.	28	9.0
Heart Diseases.	21	6.8
Gallstones.	11	3.5
Kidney failure.	6	1.9
Malnutrition.	5	1.6
Osteoporosis.	5	1.6
Brucellosis.	3	1.0

After treating the study respondents' opinion about results of changes in Saudi diet as far as the existing diseases concerned, table 4.38 shows reality of the diseases that members of the respondents' families are enduring. Diseases which the respondents acknowledge are: Diabetes mellitus 25.8%, Asthma 23.5%, Hypertension 22.3%, High blood cholesterol 13.9%, Anaemia 12.9%, Gastric ulcer 9%, heart diseases 6.8% and gallstones 3.5%. These percentages are similar to that of table 1-7 (Chapter One). Also, Al-Shagrawi's study (1999) nearly reached the same conclusion. The study finding's and those of others about illnesses which might be caused by changes in Saudi diet could be seen as a reflection of the Saudi health situation and condition.

Another interpretation of these figures is that changes in Saudi diet might have negative health effects. This statement is shared by 77.7% of the respondents who thought that: family's diet in the past was more healthy than it is today. (Statement 48 appendix A). The general picture of prevailing illnesses in the study sample is that many common illnesses could be diet related. These findings could be used to answer the study question: "What effects have nutritional changes had on the Saudi family's health?"

Conclusion:

This chapter has revealed some facts about Saudi diet, dietary habits, practices and health. For instance, there has been a big change in the nature, quantity and type of food consumed and in dietary habits and practices in Saudi society during the last forty years. It appears that consumption of fatty, starchy, sweet, junk and fast foods, soft drinks, coffee and tea are on increase, both in everyday life and on social, festival and religious occasions and parties on the one hand, while on the other hand, fresh fruits, vegetables and juices which are healthy and nutritious have not increased to the same extent. As a by-product of this nutritional situation, it seems that the Saudi diet is not a well balanced diet, as 83.5% of this study's respondents thought. Also, 81% of them were of the opinion that the increased incidence of some diseases in Saudi society could be associated with an unbalanced diet. In addition to that, the finding of this study stresses that 70.3% of the study respondents believe that change in Saudi family diet might be one of the causes in the increase of obesity in Saudi society. These findings were supported by Reastan and Tim Rodford reports. (Asharq Al-Awsat, No. 8114. 14/2/2001:26)¹.

This situation does not exist only in Saudi Arabia, but also, in the Arab world more generally.

Musaiger (1997) confirmed that:

¹nutritional anemia which results from Iron deficiency is the most common health problem in the Arab World. The rate among children under five years of age is 20 – 60%. While the rate among school children is 20 –50%. Also, pregnant women are more susceptible to expose this disease than other non-pregnant women are. The rate among pregnant women is 30 –60%. The impairment can be complicated by improper nutrition and insufficient protein and iron in addition to parasitic diseases such bilharzia, chlestomiasis and diarrhoea. Insufficient intake of food items rich in iron such as fish, liver, fresh vegetables is also a contributing factor. Also, one of the contributing factors that lead to this type of impairment is

¹ These two reports have been reported earlier in this Chapter.

the consumption of agents that hinder the absorption of iron such as excessive tea and coffee' (1997:72-3).

Another expert reached the same conclusion by asserting that:

'the changes of diet and life style have been associated with remarkable changes in morbidity and mortality rates. Chronic diseases associated with food intake and diet such as cardiac diseases, vascular, hypertension (high blood pressure) diabetes, cancer and obesity are the most common health problems in countries with high income and welfare. This is even true in other civilized countries in the Near East ' (Al-Shagrawi 1999:17).

These figures mentioned above can be looked at as a positive sign in supporting public acknowledgement of the acute and unhealthy results that can be caused by changes in the Saudi diet. On the other hand, they could be regarded as a dangerous and alarming sign for future health problems. Therefore, work is needed to address this potentially dangerous situation and to explore why these changes have occurred and what might be done to improve the situation. These issues are addressed in the next Chapters.

Chapter Five

DIFFERENT DIMENSIONS OF CHANGE

Introduction:

This chapter analyses different dimensions of change ongoing in Saudi society. Although it is impossible to cover all aspects of change in Saudi society, it is feasible to explore certain limited manifestations of this change. Here, in this chapter change is looked at through family structure in order to understand its nature and its impact on the family's health, diet and dietary habits. A number of variables will be explored in relation to family's food and dietary habits. These variables are: number of children, education, income, employment of housemaids and drivers, gender, age of the family members and recreation. This is because these variables undoubtedly play very crucial roles in shaping a family's diet and dietary habits. This chapter first considers changes that have occurred within the Saudi family and then looks at these in relation to change in diet, dietary habits and practices.

Change in Family Structure:

In Saudi Arabia, economic development has shaped many social institutions, which in turn have affected the family, such as decreased emphasis on large extended families and a consequent move towards the nuclear family. Also, women are now participating in many more sectors of society than in the past. The size of the family is becoming smaller than in the past, with a large number of children no longer preferred or affordable by members of many young families. Simultaneously, the nuclear family is on the increase, as Hamdan (1989) noted in his study on social change and the Saudi family:

'99 percent of his sample mentioned that the pattern of more than two or three generations living in the same house was widespread among Saudi families in the past. At the present time more than two or three generations living in the same house became less common in Saudi society. He concludes that the size of the family has decreased to include only the nuclear family instead of the extended family of the past' (1989:183).

This type of extended family is still relatively common in some villages and Bedouin areas, families being maintained through such relationships are called sub-clan. The families of one clan often live in neighbouring households, whether in a village or in town. A village is often composed of two or more clans. However, due to the economic and social change, a reduction has occurred in the family size and as a result, the nuclear family emerged. One main reason for change from the traditional extended family to the nuclear family is migration of the younger generation and their families to cities. Hundreds of thousands of Saudi people migrated from rural and Bedouin areas to work in cities and settle permanently because their livelihood is more guaranteed in cities rather than any where else. Living in new environments might lead people to adjust to new food, dietary habits and lifestyle such as living in a new house separated from their extended family upon marriage. In this context looking at marriage in Saudi Arabia very briefly might help understanding the nature of Saudi lifestyle change.

Marriage:

Marriage in Saudi Arabia is still typically arranged under Islamic law and social customs. It is a sacred social contract between the two families of groom and bride. In Islam, marriage is considered a religious and social institution not simply a sexual relationship. A further social and religious overall functions of marriage has been presented in the researcher's study 1989, which is useful for this study as follows: 'marriage creates many roles for the parties concerned. Each role is a set of equitable and proportionate rights and obligations. The role of husband revolves around the moral principle that it is his solemn duty to God to treat his wife with kindness, to respect her or free her from the marital bond honourably, and to cause her no harm.' (: 171) God said that 'live with them honourably. If you dislike them it may be that you dislike a thing and Allah brings through it a great deal of good' (S. 4.V. 19). Islam recognizes a man's authority over his family, but it does not mean absolute domination. Islam views husband and wife as complementary to each other.

Table 5-1 Distribution of respondents by marital status.

Marital Status	Fr.	%
Married	304	98.1
Separated	1	.3
Widow	5	1.6
Divorced	0	0
Total	310	100

This table indicates that nearly all the sample survey were married, 98.1%, a few of them were widowed, 1.6%, and only 0.3% separated. It is no surprise that very few respondents were widowed or separated because the study was only concerned with married males and females of the households surveyed.

From the sociological point of view marriage might help in creating an organized and healthy life in general terms. This view is share by Umberson's findings (1987). ' the health advantages of marriage and parental status are linked to the reduced incidence of behaviours placing people at risk for morbidity and mortality. The internalisation of norms for more conventional behaviour and external sanctions associated with marriage and parenthood presumably account for a more orderly lifestyle and fewer health risk behaviour' (1987:306-19).

Family Planning:

'Family planning means the regulation of the family size' (Nour 1976:9) In the past family planning was an unknown practice to the Saudi family. In some parts of Saudi Arabia, particularly in nomadic and rural communities family planning, although not appreciated in general, is being practiced on a very limited scale. Sebai pointed out that 'Family planning is not being practiced in Turaba (in Western Saudi Arabia) Children are wanted in the family. Knowledge about contraceptives practically do not exist, except on a small scale, particularly if a woman has enough children especially boys' (1981b: 60-1). Nowadays as Khoja *et al's* study mentioned 'contraceptive prevalence is higher among currently married women in urban 37% than in rural areas 21%. .By level of education, it varies from a low of 21% among currently

married women with no schooling to a high of 46% among those with secondary or university education'. (1996:7). Table 5-2 shows the family size of the respondents in this study.

Table 5-2 Distribution of respondents and number of children.

Number of Children	Fr	%
One child	36	11.6
Two children	32	10.3
Three	38	12.3
Four	45	14.5
Five	42	13.6
Six or more	111	35.8
No reply	6	1.9
Total	310	100

Table 5-2 shows the largest category of respondents, 35.8%, had more than six children and the next closest groups with five or four children, 28.1%, while respondents who had one or two children were only 21.9%. However, having many children in the family may have negative effects on the family's health and diet, especially if the family's income is low. A larger family places severe and various pressures on family resources often manifested in its ability to feed, lodge, clothe, educate and keep its members healthy. This finding is similar to Khoja *et al's* finding (1996) where 'the most popular family size desired is 6 children as mentioned by 22% of their study sample' (1996:7).

Table 5-3 Respondents level of income and number of children.

Level of Income		Number of Children			
		1 or 2	3 or 4	5 and more	Total
Low	Fr	19	21	42	82
	%	23.2	25.6	51.2	100
Medium	Fr.	23	15	40	78
	%	29.5	19.2	51.3	100
High	Fr.	26	47	71	144
	%	18.1	32.6	49.3	100
Total		68	83	153	304
Chi-square = 6.494 D.F = 4 P = 0.1651					

Table 5-3 tests the relationship between level of income and number of children in the family. It is clear from this table that there is no significant difference between family level of income and the number of children. In all income groups large families are more common. 49.3% of those in the high-income category had 5 children and more, while the medium and low income families percentages indicated 51.3% and 51.2% respectively. In Saudi society many people traditionally have a large number of children despite their income level. In this kind of situation it may be anticipated that low income families with large number of children could encounter acute health and nutritional difficulties and problems since their ability to purchase healthy and fresh food is very limited. Not only that, but also, they could not provide healthy living conditions for their children.

Table 5-4 Distribution of respondents and age of their children.

Age of respondents' children	Fr.	%
Less than 5 years	209	67.4
5 -10 years	195	62.9
10 -15	161	51.9
15 -20	125	40.3
Over 20 years	79	25.5

This table indicates that the majority of respondents, 67.4%, had small children aged less than 5 years, and the next group aged between 5 and 10 years, 62.9%, while 51.9% had children between 10 and 15. Respondents with children aged over 20 years was less at 25.5% . These findings indicated that most of the sample survey had children under 20 years of age needing a healthy diet during their growing up. And more efforts to increase their health and dietary awareness through education is worth taking in consideration.

Table 5-5 Respondents' level of education and number of children.

Level of Education		Number of children.			
		1 or 2	3 or 4	5 and more	Total
Low ¹	Fr.	14	19	60	93
	%	15.1	20.4	64.5	100
Medium ²	Fr.	18	18	40	76
	%	23.7	23.7	52.6	100
High ³	Fr.	36	46	49	131
	%	27.5	35.1	37.4	100
Total		68	83	149	300
Chi-square = 16.804 D.F=4 P= 0.0021					

Table 5-5 tests the relationship between level of education and number of children in the family. A significant difference exists between level of education groups. As might be expected, the lower the level of education the larger number of children. This table indicates that a large family is a common feature in the study sample. But as far as education is concerned, there is a significant difference between level of education and number of children. The data show that the percentages for those with 5 children and more increase gradually from 37.4% for those with high level of education to 52.6% and 64.5% for medium and low education categories respectively. Families with few children may be able to spend more resources and efforts in bringing up their children with better diet and health conditions. Conversely, families with higher education and therefore, higher income may have greater resources, and knowledge concerning proper diet and health conditions. Moreover, 65.5% of the respondents agreed with statement 64 (Appendix A) that it is necessary for parents to have family planning to enable them to provide best health and nutritional care for their children. It is clear that education seems to play a significant role in determining family size. This finding is similar to Khoja et al's study finding 'husband and wife communication about family size is positively associated with level of education, the preparation reporting discussion increases from 25% among illiterate to 56% among those with University education' (1996:7). Family planning helps

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- 1- Illiterate, barely read and write and elementary school certificates are combined in one category called low education in this study.
 - 2- Medium education includes the intermediate and secondary school certificate.
 - 3- The third category of education in this study, high education includes those who have graduated from University or College and those who have a postgraduate degree.

mothers to preserve a good health and enables the family to improve the standard of living. Family planning becomes an important social issue as a feature of change which ought to be of an immediate serious concern for the social planners to have in mind to create social and economic changes improving the Saudi family over time.

Features of Changes in Saudi Family:

In this context winds of change are blowing from all directions and they can be seen not only by sociologists and anthropologists ,but also by Saudi people themselves as the following table suggests in setting out the respondents' opinions about the types of change they are witnessing in the Saudi society.

Table 5-6 Distribution of respondents according to their opinion about changes in the Saudi family.

In your opinion what are the changes that take place in the Saudi family?	Fr.	%
Depending on foreign workers such as housemaids and drivers to carry out most of family's duties.	276	89
Many appliances and various types of cars consumer expenditure.	251	81.0
Extravagant in foods and drinks in parties, feasts; and festivals.	227	73.2
Frequent travel abroad during holidays and vacations of the family.	210	67.7
Weak familial relations.	173	55.8
The family consumption exceeds its income.	159	51.3
Many dietary habits have changed.	153	49.4
More free and leisure time for the family.	131	42.3
Ambition for acquiring higher education for boys and girls.	130	41.9
Increase of family income.	110	35.5
Husbands travelling abroad alone.	106	34.2
Increase of divorce cases.	97	31.3
Women participation in various activities and jobs outside the house.	91	29.4

Features of change in Saudi family are numerous this study could not encompass all features of this change. Four of these features which are apparently very closely and directly related to the core of this study, according to the respondents' opinions will be exposed:

- 1- Dependency on domestic foreign workers to carry most household duties 89%.

2- Extravagancy of food and drinks in parties and festivals 73.2%. 3- Family consumption exceeds its income 51.3%. 4- Many dietary habits have changed 49.4%. From this picture of four changes in the Saudi family, it is beneficial to explore their implications. For instance, the dependency on foreign workers carrying most of the family's duties leads to an increase in laziness and obesity among Saudi family members, which may in turn have negative consequence on the next generation. This point will be elaborated in more detail in the next section. The next most important feature of change is the enduring extravagancy of food and drinks in parties and festivals (as shown in the above table). This social trend and habits may encourage people to gain unnecessary weight, which could lead to many health problems. Moreover, most unconsumed foods and drinks are thrown away as waste. Religiously speaking, this kind of consumption behaviour is contradictory to the Islamic teachings. God said 'eat and drink but waste not by extravagance for Allah loveth not those who waste by extravagance' (S.7V:31). Family consumption exceeds its income appears to be one of the most difficult situations in which many Saudi families face. Some families are not taking very seriously the family spending budget according to their financial commitments. In this kind of situation, one expects that many essential needs could not be met and many financial difficulties, therefore, would be imposed on family resource allocation. The respondent's recognition of changes in the family dietary habits can be seen as a real fact at least from a participant observation perspective. Where 49.4% of them acknowledged that this change could lead to unfavourable health conditions in the society, this deduction is shared by the study respondents as it has been treated in Chapter Four. The above signs of change are noticeable and closely related to the economic functions of the family at large.

Economic function:

In the past, the family used to be an independent self-sufficient economic and social unit. The Saudi family no longer carries out all functions that it used to perform in the past with considerable portion of its functions has shifted to social institutions. At the same time the family

has shifted from being a productive unit to becoming a consuming unit. The economic function of the family has therefore, changed. Hamdan in his study (1989) emphasizes this point 'Saudi family used to be a production unit, where it produced most of its members' needs. After the spread of industries and technology, however, the family has passed many of its functions to other agencies in the society. Among these functions are the economic and educational functions' (1989:167). In the past, Bedouin women used to wake up early in the morning and make Arabian coffee and breakfast, milk the sheep, goats, and cows and feed them.(Keeping animals; cows, goats, and chicken for food production is another economic activity which was practised by most families in Saudi Arabia in the past). Upon completion of these chores, a Saudi woman used to go to graze the livestock, bring water from the well, and then come back to her house to prepare food and bread. Preparing bread at home is one of the productive functions which was important to the Saudi family in the past alongside taking care of her children and her household. However, at the present time, the function of the Bedouin woman has changed and she no longer works with the livestock as she used to do in the past. Her role now is limited to taking care of her children and carrying out domestic jobs. It is normal for a Bedouin girl to go to school and work. For the urban woman, in the past, she used to wake up early in the morning to prepare Arabian coffee and the traditional breakfast, normally comprised *henainy* (flour, honey or dates and goat's or cow's butter) or bread and *foul*. Having finished preparing breakfast, she used to take care of her house and her children.

At the present time, due to economic and social change, Saudi women can go out for education or for work. Saudi women seek assistance to take care of children during their absence or to have a housemaid to help in the house, and look after their children. The need for housemaids has thus emanated from the changes that occurred in the Saudi family such as education of women and their work also, because of the change in the family structure from an extended family to nuclear family. In the extended family its members used to cooperate in carrying out family functions. Women used to cooperate to perform domestic jobs. older women

would take care of small children, while their mothers were busy doing domestic services. At the present time, boys and girls do not help their parents because they are busy studying and doing their homework. It is the family's duty to provide for their needs and requirements including preparation of their clothes and their meals, and to help them in doing their home work in addition to other personal needs. This has led to most of the family's responsibility being shouldered by the mother. Furthermore, change in traditions and values has multiplied domestic work in a burdensome manner because the wife has to prepare many kinds of food and dishes and prepare clothes, as well as cleaning furniture. Also, in the past, houses were small, but now, they are very spacious which makes their cleaning more difficult and burdensome for women. In addition to that, social visits and occasions are tiring for women because of preparation of different kinds of food on such occasions and ceremonies. Moreover, women mostly shoulder the care of elderly because most families prefer to maintain and keep them in their houses. This task necessitates the assistance of housemaid, who is now present in most Saudi families. The following statistical release issued by the Ministry of Interior in 1983, revealed that the number of housemaids has increased rapidly during the period between 1978-1983, from 5,758 to 26,845. And in 1986 the number was 750,000 . According to Abdulgader's study (AL-Watan daily newspaper No. 254. 10/6/2001:33).Al-Konaibitt in the weekly Alyamamah magazine (No.1510, 20/6/98:77) showed how this picture becomes more conspicuous as far as the number of the domestic workers is concerned, which rose to 1,500,000 persons in 1998. Tables 5-7 5-8 and 5-9 indicate the position of the survey sample on this point.

Table 5-7 Distribution of respondents according to family employ foreign workers.

Employ foreign workers.	Fr.	%
Yes	209	67.4
No	98	31.6
No Reply	3	1.0
Total	310	100

Table 5-7 reveals that only 31.6% of the respondents did not have foreign workers. While the majority of respondents 67.4% had foreign workers in their houses. This phenomenon started to emerge from early 1970s and continue to increase until now.

Table 5-8 Distribution of respondents according to their foreign workers.

Type	Number		Religion			
			Muslim		Non-Muslim	
	Fr.	%	Fr.	%	Fr.	%
Nanny	13	3.8	10	76.9	3	23.1
Housemaid	236	69.2	194	82.2	42	17.8
Cook	9	2.6	7	77.8	2	22.2
Driver	83	24.3	73	87.9	10	12.1
Total	341	100	284	83.3	57	16.7

Table 5-8 indicates that 69.2% of the respondents had a housemaid. The majority were Muslims, 82.2%, while only 17.8% were non-Muslims. The presence of foreigners, especially housemaids at home, seems to be widespread among Saudi families at the present time. Muslims are preferred because they share the same religious values, making Saudis more comfortable about their presence in the house, as well as looking after their children and their diet and dietary habits. The next largest group was the driver 24.3%. Many Saudi families have a driver, or more than one, as a result of many factors such as:

- 1- Women not being allowed to drive cars.
- 2- Family income increase.
- 3- Urban growth of the city of Riyadh, and long distances between its parts.
- 4- Increase of family demands.
- 5- Change in the Saudi family type from extended or joint family type to nuclear family type not meeting all its members' demands. Also, many Saudi younger generation depend on drivers to take the responsibility of family duties.
- 6- Women's enrolment in the labour force and children's need to be taken to schools.

When we look at table 5-8 it is clear that most drivers are Muslims, 87.9%, while only 12.1% are non-Muslim. Muslim drivers are preferred because of shared religious values. The

following table shows clearly the respondents' reasons for employing foreign labour in their homes.

Table 5-9 Distribution the respondents according to the reasons for family employing foreign labours.

Reasons for family employing foreigners.	Fr.	%
Women's work.	191	61.6
Many household burdens.	191	61.6
Wish to rest.	184	59.4
Women enrollment in education.	117	37.7
Hospitality.	101	32.6
Elderly or patient needing permanent care.	101	32.6
Poor health of the wife.	91	29.4
Old age of the wife.	82	26.5
Lack of suitable kindergarten.	53	17.1

This table indicates that women's engagement in work out side homes and their enrollment in education appear to be the most conspicuous reasons for employing foreign workers 99.3%. This kind of total dependency on foreign workers of the Saudi family could be interpreted to the fact that most Saudi families become nuclear families- as mentioned before - where mothers are in need of somebody to look after their children while they are outside homes. Nowadays, household's domestic duties are more than women can carry out with out help 61.6%. In the meantime women's desirability to have time to rest appears to be another important reason 59.4%. Additionally, social obligations become more demanding and consuming of women's time. Women's health state, condition and old age seem to be very crucial justification to employ foreign workers according to 55.9% of the respondents, because she can not fulfill her family responsibilities, without help. The lack of suitable kindergartens was the least reason 17.1%. Having foreign housemaids in the Saudi house to shoulder the housewife's general domestic duties and obligations might not be a sensitive issue, but when it comes to preparing and cooking the family's meals, these tasks ought to be carefully and closely handled and supervised by the housewife in order to safeguard the family's diet and health. Respondent's opinions on this matter were sought.

Table 5-10 Distribution of respondents according to preparing and cooking food for the family.

Preparing and cooking food for the family.	Fr.	%
Mother.	177	57.1
Housemaid.	26	8.4
Mother and housemaid help her.	112	36.1
Cook.	7	2.3
Family members.	23	7.4

The survey results summarized in this table show that: the majority of respondents, 57.1%, reported that mother is the one who prepares and cooks the family's food, which is a very good sign. The next largest group was 36.1%, where mother with housemaid's help prepared and cooked food for the family. Respondents who indicated that the housemaid was the one who prepared and cooked the family's food represented 8.4%. Dependency on a housemaid either in helping mother or in preparing and cooking the family's food may have negative health effects on the family because many housemaids are illiterate and unaware of hygiene rules for preparing and cooking food. These findings answer the study's question: "Who carries out the tasks of preparing and cooking foods in the family?"

The findings of the open question: 'Are there healthy advantages and disadvantages from foreign domestic labourers on Saudi family?' show that 27.4% of the respondents reported that housemaids helped their wives in doing house jobs, cooking and taking care of the children. While 19.3% of the study sample indicated that one of the advantages of foreign domestic labourers is saving time for family members, especially the mother to look after her children, do social duties, take care of herself and take part in other cultural activities. 11% of the survey sample indicated that most household duties fell on the housemaid's shoulders, which releases the mother from these duties. 6.5% of the respondents thought that one of the advantages of having a nanny and housemaid is to look after children when the mother is outside the home or in case of the mother's sickness. 3.2% of the study sample reported that helping the wife in case of the presence of guests is one of the advantages of a housemaid.

Making new types of food for the family was reported by 2.9% of the respondents. Looking after the elderly people is another advantage as reported by 1.9% of the respondents. The disadvantages of foreign domestic labour for Saudi families are the following: 40% of the respondents reported that family members become dependant on them to do most of family's responsibilities leading to laziness and weight gain in family members, especially young girls and boys. 11.6% of the respondents thought that the spread of diseases in the family could be attributed to the presence of foreign workers in the family. While 11% of the study sample mentioned that housemaids and cooks do not care about cleanliness in preparing and cooking food. The increase of spending money which has negative effects on family's budget was mentioned by 4.5% of the respondents. Also, Al-Ghamdi in his study (1985) of attitudes towards the impact of a foreign labour force in Saudi society found that:

'regarding the general impact of foreign workers on the relationships within the Saudi family, about (88%) of his respondents believed that having a foreign housemaids, nannies, and drivers within the Saudi family was likely to produce harmful effects on relationships within the family. Also there are negative attitudes on the part of Saudi citizens towards foreign workers' (cited in Al-Abdullatief 1989 : 119)

As a result of the above mentioned factors and the availability of money with a large proportion of families on one hand, and the low salary of the housemaids on other hand, the number of drivers and housemaids is progressively increasing. This situation seems to contribute to greater free time of family members than before, time which can be used in many different recreational activities, as explored below.

Recreation:¹

Recreation is an important element in the health and well being of people. Recreational centres such as public gardens, children's playgrounds and public spaces are available in several parts of each city and village in Saudi Arabia. In spite of the socio-psychological pressure of modern life many people are unaware of the effects of psychological matters on their health.

1-There is no noticeable change in the recreational activities of Al-Abdullatief's study (1989) as shown in page 195 and of this study.

They do not take an interest in recreational activities, which could be of great help in relieving some of the socio-psychological pressure. The following table shows respondents' situation in this regard.

Table 5-11 Distribution of respondents according to the priority in their spending.

Priority	Eating		Clothing		Medication		Education		Furniture		Recreation	
	Fr.	%	Fr	%	Fr	%	Fr.	%	Fr.	%	Fr.	%
1	253	81.6	10	3.1	19	6.1	26	8.4	4	1.3	2	.6
2	26	8.4	147	47.4	75	24.2	52	16.8	7	2.3	3	1.0
3	20	6.5	79	25.5	99	31.9	71	22.9	17	5.5	18	5.8
4	7	2.3	58	18.7	60	19.4	94	30.3	47	5.2	34	11.0
5	1	.3	13	4.2	36	11.6	38	12.3	155	50	58	18.7
6	0	0	2	.6	14	4.5	23	7.4	74	23.9	184	59.4
No Reply	3	1.0	1	.3	7	2.3	6	1.9	6	1.9	11	3.5
Total	310	100	310	100	310	100	310	100	310	100	310	100

Table 5-11 demonstrates that recreation is of little importance to the Saudi family. The question was asked. 'Enumerate the following to show priority in your family spending?'

This table reveals the pattern of life in the Saudi family as far as spending is concerned. The study found that the most preferred item of expenditure was eating, 81.6, second clothing 47.4, third medication, 31.9%, fourth education 30.3%, fifth furniture with 50%, and last was recreation, 59.4%. These results are important to the study as they reveal the Saudi family spending pattern and the special characteristics of Saudi family spending priorities and consumption. One could assume that social visiting might play a great importance and substitute for family recreation. In addition, TV and satellite channels are a common way of passing time and that is why recreation is a low priority in family spending. This is not so in western societies, where recreational activities are very important. People in those societies are aware of the value of recreation for health.

Another feature of the new trends in Saudi society is going to restaurants and big social gatherings. This trend could be seen and interpreted as a purposeful social recreation, in general for society and for the Saudi family in particular. The fast spread of take-away, fast

food and international restaurants in the city of Riyadh, as well as in other big cities in Saudi Arabia, has become a noticeable form of recreation. Also, the emergence within the last ten years of the so-called (*Essterahaf*) places outside the city, where families or individuals can stay and eat meals, and have parties during the weekends in *cabins* or *chalets*, can be regarded as part of the Saudi family recreational alternatives. Families frequently go to these places with their relatives. They can enjoy the cool night air, go swimming and participate in sports. These places and some restaurants provide children with playgrounds, and special sections of the premises are designed exclusively for families only. In fact, these facilities are deliberately made to attract customers in general, and families in particular, for eating as well as for recreation.

Diet Across the Life Course:

‘Stage in the life course has its influences on food choice. Early eating experience may condition eating habits for a lifetime’ (Fieldhouse 1986). Early adoption of appropriate eating patterns will prevent or delay the onset of diet related diseases and the easiest way to have healthy eating patterns in adult life is to acquire them in childhood. Many eating habits formed in infancy and childhood carry over to later life. Infants and young children are dependent on adults for what they get to eat, they have little choice in the matter other than through refusal to eat it at all. Empirical evidence from the survey might help in understanding the link between diet and age.

Table 5-12 Distribution of respondents according to the children's type of meals.

Type of Children's meals.	Fr.	%
Special Meals	47	15.2
Family Meals	251	81.0
Ready-made meals	5	1.6
No Reply	7	2.3
Total	310	100

Table 5-12 shows that: the majority of respondents, 81%, reported that their children ate from regular family meals, while few 15.2%, made special meals for their children. Ready-made children's meals were the least popular, 1.6%. Moreover, 16.1% of the study sample agreed with statement 21 (Appendix A) that it is not necessary to prepare special meals for children. Since about 81% of the study respondents had acknowledged that their babies eat with them without making any special meal for them, this kind of situation might be interpreted as a sign of lack of nutritional knowledge as far as babies' healthy eating is concerned.

Table 5-13 Distribution of respondents according to their choices of the person who prepare children's meals.

Who does prepare and cook children's meals?	Fr.	%
Mother	51	16.5
Housemaid	24	7.7
Family member	1	.3
Not applicable	234	75.5
Total	310	100

Table 5-13 shows that most respondents, 16.5%, who prepared and cooked special meals for their children, were mothers. That could be seen as a positive sign of health and dietary concern and should be encouraged by all local and national means and efforts. 7.7% of the respondents reported that housemaids cooked meals for their children. Many housemaids are illiterate and might be unaware of the healthy methods in preparing and cooking food. They might prepare and cook food in an unhygienic way which may have negative effects on the child's health. Also, some housemaids may lack knowledge about the right nutritional needs of children which might be one of the main causes of children's malnutrition. For example, research conducted by Al-Othaimeen in 1986 about weaning methods and practices of the mothers of 767 Saudi Arabian infants and children found that:

'most of the children studies had desirable weight for height, except for the male, 0-6 month group and the male, 7-12 month group, which were found to be mildly wasted. All the children from age 3 months up to one year (0-6,7-12 months) had normal heights for age but gradually decreased with increasing age. All were classified as stunted after 12 months of age. Protein, calcium, vitamin A, thiamin and vitamin C intakes were found to be adequate for most age groups. Calories, iron and

niacin were below recommended dietary allowances of the (WHO). The research showed that breast-feeding was extended up to two years so, since the children were mainly dependents on breast milk and not getting enough food supplementary, the children were found to suffer some consequences; nutrient deprivation and resulting malnutrition. 'Education is needed about the giving of locally available food supplements, the right kind and the right amount, depending on the needs of the individual child and his readiness to accept these foods. A schedule of feeding, starting from the age four to six months, should be planned so that whatever solid foods that need to be given at each age level will be included in the family budget. Feeding of these supplements should be part of a general plan involving the whole family and not a haphazard giving of food when the child happens to be eating with the family. Also there is a need for the massive education of the family, starting from the mothers' (1986:42-5).

Also, Khashoggi in her paper "Nutritional Problems of Infants and Young Children in the GCC Countries" mentioned that:

'one of the most important health problems affecting infants and preschool children is malnutrition. In the first five years of life, a child is totally dependent upon food supplied by others. Human growth and development are affected by biological, cultural and environmental factors. Under-nutrition early in life, has a great adverse effect on mental development and hence on the learning potentials of the child. The rapid changes in social and economic status in the GCC countries have an impact on food habits and nutritional status of infants and young children. Growth retardation, low birth weight, iron deficiency anaemia and Vitamin D deficiency are still common nutritional problems in these countries' (1998: 98-101).

Early introduction of weaning food has several adverse effects which include: inducing infant's preference against breast sucking, reducing the frequency of breast-feeding, termination of breast-feeding at an early stage, increasing the probability of infant infection emanating from unhygienic preparation of weaning foods or improper sterilization techniques, and increasing the probability of malnutrition if weaning food is not correctly chosen. Adverse effects of these two factors are compounded by ignorance of the proper selection and preparation of weaning food. This is particularly paramount in the case of illiterate mothers who cannot read labels and preparation instructions, or properly measure the ingredients of infant food. In a study carried out on young mothers at King Abdulaziz University, it was found that 'only 3% of mothers read food labels. The main reasons for not reading the labels were haste, 66.7%, language difficulties 41.7% unclear information 17.7% and feeling that it is not important 13.5%' (Khashoggi *et al.*,1995:23). If college students are not willing to read or cannot read nutrition labels, one can imagine the difficult situation of weaning for an illiterate mother. Khoja *et al*'s (1996) study found that 'about 20% of children with diarrhoea were given an increased amount of liquids, while fluid intake was cut back in 24% of the cases. Among children with diarrhoea who had been

introduced to solid foods before the last episode, over one half continued to receive the same quantity of solids. 6% received more, while a high of 31% cut back on solid food. This pattern reflects a lack of practical knowledge among many mothers regarding appropriate feeding practices for children during episodes of diarrhoea illness and point to urgent health education needs in this respect' (1996:14). Traditional teaching of new mothers by their mothers is not very effective either since the majority of baby food preparation is of relatively recent introduction in the society. Presenting and treating children's eating habits and practices as a special segment of the society is crucial for this study, since young people represent a large section of the society in Saudi Arabia as a newly developing country. Nutrition of the child calls for special attention, since shortages to which an adult might be able to adapt without any ill-effects, may hinder a child's growth and development. A child has greater nutrient requirements in proportion to total energy intake than an adult, so the diet has to be 'better' a problem that is compounded by the possibility of children consuming inordinate amounts of sugary and junk foods and so effectively reducing the nutrient density of their diet.

Following this discussion of childhood the next life course stage to be explored in this study is the adolescent food stage, which has great effects on people's food choices and practices. Saudi society is a youthful society like many developing countries. Haseebullah, *et al.*, (1996) mention that 'more than 50% of the Saudi population is under the age of 17 years' (1996: 8). Therefore, analysing briefly adolescent food and dietary habits will help to present a broader picture of Saudi dietary habits and practices. Having breakfast daily is crucial for a well balanced diet, but it seems to be unimportant to many people and to the younger generation in particular. They take only lunch and dinner. Skipping breakfast means depriving the body of necessary physical and mental energy. In practical terms 14.2% of the study sample agreed with statement 7 (Appendix A) that breakfast is not necessary as an important meal. Meanwhile, a study conducted by Al-Muitaz (1988), on a sample of 252 female students between the age of 12-15 years has shown that '70% of the sample did not

take breakfast and that they preferred junk food between meals. This practice has led to malnutrition and the study revealed that 80% of the sample take vitamins and mineral tablets' (1998:54). In this context, junk food is defined as quick to prepare or ready to eat and that is unhealthy because it contains too much fat, sugar and chemicals to give it artificial colour and taste' (Franklin Oxford Speaking Dictionary 1997) Also, another study by Abdulfattah came to similar conclusions 'breakfast is frequently skipped by school children and , even if not skipped, it is likely to be poor in quality. Studies of the food habits of school children in the Eastern Region pointed out that many children did not eat their breakfast or only ate an inadequate one' (Abdulfattah 1975:20). The emergence of this unhealthy dietary trend in the Saudi society might be attributed to many causes. For example, the existence of premises selling sweets, junk food and soft drinks may encourage students not to have their breakfast at home and to buy less nutritious food at school. A research study about "Eating Breakfast among School Girls" showed that '32.2% of high school and junior high school students do not take breakfast at home, whereas 85.5% of the students buy junk food from school premises' (General Administration for Health Services in Girl's Schools 1997:8) . Also, Al-Othaimen, et al., in their study (1999) about the prevalence of nutritional anaemia among primary schools in Riyadh showed that:

'16.5% of the girls did not take breakfast at home and depend on snacks offered in the school canteen which consist mostly of biscuits, chocolate bars, potato chips and carbonated cola drinks. No association between education of mother and father and breakfast consumption at home was detected. Tea drinking is common among these girls while fresh fruits and vegetable consumption is infrequent. Iron deficiency anaemia is highly prevalent among these schools girls which seriously affects the growth of 7 and 14 year old girls' (1999:237-43).

Buying junk food and soft drinks at school is also, common in Gulf countries where no nutritious or fresh food is given to students. Musaiger for example, mentions that:

'school-food in Gulf countries depends on canteens which sell soft drinks, chocolates, sweets, potato chips, corn puffs, and various kind of sandwiches. These foods are offered to children during the mid-morning break. The canteens are run either by school teachers with the assistance of students and other staff or by an agreement made with contractors of agencies to operate and manage these canteen. There are no specific programmes for school food that aim to improve the health and nutritional status of children' (1985: 104-6).

Selling sweets, junk food, and soft drinks in schools without paying any attention to providing a balanced meal for the students may affect their health negatively. Bajabir stated that:

'the school premises do not comply with the hygiene regulations and conditions regarding the foodstuff and beverages, which they used to provide to male and female students. These premises are primarily focusing on selling sweets, candies, potato chips, corn puffs; different kinds of chocolates; and soft drinks. They are not keen to sell and provide healthy and nutritious meals' (Al-Riyadh, No. 11087 1/11/1998:35)

Bajabir suggested that:

'school premises must pay special attention to different age categories since every age has its own dietary requirements and needs. The school meal should meet the needs of the student and their economical level and social standard. Schools' premises should take the benefit from the scientific researches in their educational policies and procedures. They must also make sure that they implement the recommendations and findings of these researches. School and its premises should adopt a scientific approach regarding their decisions pertaining to curricula and dietary policies to be compatible with the daily needs of students as well as their economic, social and cultural standards' (Ibid)

Also, Musaiger (1998a) indicated that:

'dietary awareness is very essential due to the rapid increase of diet-associated diseases among the school children. For example anaemia, obesity, and dental decay. A study conducted in Madina (400km north of Makkah) revealed that the rate of dental decay was 91% among the students of first class of elementary school, and 98% in third class of elementary school. In Riyadh, the rate of high blood cholesterol was 34% among female students and 32% among male students at elementary school level'. He stated that:

'there were a number of unhealthy habits are practiced by male and female students. These habits include the following:

1. Not having breakfast at home.
2. Consumption of poor foodstuff during breaks in schools such as candies, chips, corn puffs and soft drinks etc.
3. Insufficient intake of milk and excessive intake of soft drinks.
4. Insufficient intake of fresh fruits and vegetables' (1998a:102).

Musaiger recommended that the sale of candies, soft drinks, corn puffs and chips should not be allowed in school premises. Instead, highly nutritious foodstuffs should be sold, such as milk, juices and fruits. He also suggested that prices of these items should be fixed. In addition, dietary education programmes should be increased inside schools and at homes. Specially designed dietary educational courses should be held for school directors and teachers. School curricula should also include dietary education courses and dietary habits. Some schools children should be encouraged to apply these guidelines in their daily life. (in *Al-Riyadh, No. 11087 1/11/1998: 34*). In addition to poor value of junk food and soft drinks being sold on school premises, some foreign workers who prepare and handle sandwiches may not

be concerned about cleanliness and may be unaware of the hygienic way in preparing and handling food. Also they do not have health certificates nor qualifications, as reported in Al-Riyadh 'some school employed foreign workers to prepare and handle school sandwiches and snacks, although they were not qualified or experienced in health and hygiene matters at all. They were barbers, plumbers and shepherds who were cheaper to hire without any consideration for their health hazards to the students' (Al-Riyadh, No. 11057, 2/10/98:8).

Another aspect of dietary ignorance in relation to female needs is manifested in the fact that many girls are not keen on taking food containing a good proportion of iron for compensation of what is lost due to menstruation. 'Adolescence, a period of rapid physical growth and increased nutritional requirements to support increase in body mass, makes adolescent girls vulnerable to nutritional problems because of several physiological and social factors' (American Dietetic Association 1989: 105-9). Musaiger for example, indicated that:

'studies of adolescent girls in this region demonstrate a number of health and nutritional problems. Iron deficiency anaemia is the main problem among adolescents in all socio-economic groups. Also a major concern is inadequate energy intake leading to underweight among a relatively high percentage of these girls. At the same time the prevalence of obesity in adolescent girls has increased, suggesting a predisposing factor for chronic diseases such as heart disease, diabetes and hypertension. One of the main reasons for the increasing prevalence of overweight and obesity among teenagers girls is the intake of foods high in energy and fat, lack of physical exercise and sedentary life style. Such chronic diseases are the main causes of death in the region, and thus any programme to prevent and control these diseases should start with children and adolescents. Iron deficiency anaemia is considered one of the main nutritional problems among adolescent girls in the Gulf. Health and nutrition of adolescent girls has been neglected in health programmes in most Arab countries, where the girls become child care takers well before they become mothers. Despite the significant improvement in educational and health services in these countries, the health and social status of adolescent girls have not improved' (1998c: 102-3).

Moreover, Abahussain *et al.*, (1999) in their study of the Nutritional status of adolescent girls in the Eastern Province of Saudi Arabia found that:

'11% of girls were underweight. 61% were normal and 28% were overweight or obese. The findings revealed that adolescent girls in Saudi Arabia face two contrasting nutrition situations, underweight and overweight. Similar findings were reported in other Arabian Gulf countries, indicating the need for intervention programmes to promote better nutrition among school children and adolescents in Saudi Arabia' (1999:171-7).

A comparative study by Prattala carried out a sociological and nutritional investigation of teenager's food consumption patterns in Finland and found similar results: 'Adolescents are confronted with a duality; well aware of the real food of their parents and of nutritional advice on

low fat and sugar consumption, they nonetheless find junk food far more appealing' (1989). During adolescence when there is a continuous struggle to find the self, the teenage periodically adopts food fads, exhibits intense dislikes and displays huge appetites. His/her obsession with his/her body image is basically a sexual problem. Foods for muscle building for the boys and figure controlling ones for the girls are popular. Many adolescents and teenagers prefer fast food and reject traditional food. The following tables show the relationship between age and going to restaurants.

Table 5-14 Relationship between the respondents' age and going to restaurants.

Age		Going to Restaurants.				
		Twice a week	Once a week	Once a month	Never	Total
< 30	Fr.	12	27	11	6	56
	%	21.5	48.2	19.6	10.7	100
30-40	Fr.	17	85	20	3	125
	%	13.6	68.0	16.0	2.4	100
40-50	Fr.	12	34	9	2	57
	%	21.1	59.6	15.8	3.5	100
> 50	Fr.	7	16	7	6	36
	%	19.4	44.5	19.4	16.7	100
Total		48	162	47	17	274
Chi-Square = 18.42		D.F=9		P= 0.0306		

It is clear from this table that there is a significant difference between age and going to restaurants. The younger respondents tend to go to restaurants more than older respondents. Also it appears that all segments of Saudi society have become accustomed to going to restaurants. This trend could be partly a consequence of the influence of other cultures, either thorough travelling abroad or international mass-media and food globalization. This finding is similar to Al-Onaizi's finding in his study (1998) mentioned in Chapter Two.

Table 5-15 Distribution of respondents according to their preference of restaurants' food.

Preference of restaurants' food.	Fr.	%
Fathers	24	7.7
Mothers	55	17.7
Children	198	63.9
All family members	57	18.4

Table 5-15 illustrates that children are the family members who most prefer eating in restaurants, 63.9%. Next were all family members, 18.4% . Mothers were third, 17.7%, while fathers, 7.7%, were least inclined to enjoy eating in restaurants. It could be due to the fact that home cooked food is cleaner and cheaper than restaurant food, which makes fathers not in favour of eating in restaurants. The same could be applied to mothers, but they may appreciate a break from the burden of cooking at home and a change from home setting.

Table 5-16 Distribution of respondents according to their preferred restaurants.

Preferable restaurants.	Fr.	%
Fast Food Restaurants.	173	55.8
Other restaurants.	100	32.3
No reply.	37	11.9
Total	310	100

This table shows that the majority of respondents, 55.8%, preferred fast food restaurants, while 32.3% preferred other types of restaurants. This finding agrees with Al-Onaizi's study where 59% of the respondents preferred fast food restaurants and 41% preferred others. This might be due to the fact that fast foods are quicker and cheaper. Also, the phenomenon of fast food restaurants has become an international one, and Saudi Arabia is not exempt from it. The number of fast food restaurants in Riyadh in 2001 was 7,673. (See table 4-16). 'young people who may have spent a large part of their teenage years living on snacks and fast food appear likely to change their habits when they move in with a partner, and particularly when they begin having children' (Caplan 1997:6).

Another negative dietary habit of many Saudi families is that the elderly eat the same diet as the rest of the family. No special food is prepared to meet their needs. Statement 28 (Appendix A) stressed this point where 14.6% of the survey sample thought that it is not necessary to prepare special food for the elderly to meet their health and age needs. They need a special diet, which should be low in calories, fats and sugars and high in protein, vitamins and iron because their digestive systems are weak and most secretions that facilitate

digestion have become attenuated. In addition to that, the loss of natural teeth may make them unable to chew solid food. They need a diet that contains essential nutrients, such as proteins to substitute for missing cells of the tissues and minerals of significant importance for strengthening the skeleton and the nervous system. Also they need fresh fruits, vegetables and fruit juice in their diet because they are a rich source of vitamins essential for their health. Food plays an important role in determining health status of old people. Malnutrition could be the cause of many health problems such as cardiac disease, intestinal impairment, renal problems, and arterial sclerosis, diabetes, high blood pressure and other health problems. They need a diet proportionate with the capability of their digestive systems, and as such not containing high levels of spices and stimulating beverages such as tea, coffee and soft drinks. Elderly people need food which is qualitatively and quantitatively good. A diet that does not meet their needs may contribute with other factors to increase their health problems. It is necessary, therefore, to make people aware of the food that is suitable for their health and age. A study on nutritional status and satisfaction of food services introduced to elderly at Al-Riyadh City Care Centre showed that:

'nutritional awareness knowledge and attitude is poor , 69.7% think that animal fat is better than vegetable oil, 66.6% think it is wise that diabetic patients eat jam and 30.3% believe that drinking water before eating is bad for health. The results indicated that chronic diseases of the elderly affected 20.4% from this 14.3% diabetic and 4.8% were hypertensive' (Numair K, *et al.*, 1998 : 54 cited in *Third Saudi Symposium on Food and Nutrition*)

Looking after the elderly in the Saudi context within the last 13 years have witnessed very minor change in its philosophy and functions and for this reason what was true and valid in Al-Abdullatief (1989) study is still applicable to this study as follows:

'In Saudi society children or nearest relatives traditionally look after old people. When the parents grow old they usually live in their son's houses, and supporting parents would include providing housing, food and health care. The way that the family treats its elderly is very important for the health sector. It helps to reduce the burden on health institutions and nursing homes, if elderly people are taken care of by their family. Nowadays, however, as a result of social and economic changes in Saudi society, the way of caring for old people has been affected and the government has taken over some responsibility for the care of old people. For instance, the Ministry of Labour and Social Affairs provides institutional social services to elderly people who are in need.' (: 198)

Howarth elaborated more precisely on the elderly social situation as he pointed out:

'when children leave home and later the partner died, food rituals take on new meanings. Women who lose their husbands are no longer obliged to cook meals which appeal to their family's tastes. Men, on the

other hand, if they have no one to cook for them, may have to learn a new set of skills - skills which have traditionally been seen as women's work' (Howarth 1993:67).

Another negative dietary habit of many Saudi families is that their patients eat from family's meals. No special meals are prepared for them to meet their health needs. A patient's nutrition need to be consistent with the sickness of which the patient is complaining. A patient must be restricted to an ideal diet when he/she is sick or during convalescence. The ideal nutrition must provide adequate volume of calories, proteins, fats, carbohydrates, vitamins, minerals and fluids in accordance with the patient's health condition. Low calories are prescribed to patients with obesity, whose diet must be restricted to fresh vegetables, fruits, eggs, meat, fish, chickens and low fat milk. This regime provides the body with all necessary proteins, vitamins and low calories. During convalescence, a patient must adopt a healthy diet. However, if a person is diabetic, he/she must take a very low carbohydrate diet, sweets and sugar. If a patient is suffering from a peptic or gastric ulcer, he/she should avoid consuming spices and hot, fried foods. When a patient is feeble he should take a diet that is rich in protein, calcium, vitamins and carbohydrates. A patient after a tonsillectomy needs a diet that can be easily swallowed. Also, one who has undergone an abdominal operational procedure needs to have a liquid-like diet and then gradually move on to solid food. Unfortunately it seems to be that many Saudi families are not aware of the advantages of making special kinds of food that are healthy and suitable for their sick people. Many sick people in the Saudi society eat normal family meals that may contribute with other factors to increasing their health problems. 12.3% of the study sample agreed with statement 27 (Appendix A) that it is not necessary to prepare special food for patients to meet their health needs. It has to be admitted that this percentage is not significantly high, but, it should be reduced through health and nutritional awareness programmes. The same finding shared by a study conducted in King Faisal Specialist Hospital on dietary habits and chronic diseases, revealed that one common feature shared by sick people complaining of cardiac, cardio-vascular and some cancer diseases was the habit of consuming fatty foods, particularly lamb. Also, obese people tended to consume an unhealthy diet high in

calories with excessive quantities of fast foods, canned food and soft sweetened coloured drinks. There is also a relationship between excessive consumption of tea immediately after meals and anaemia, especially among people whose meals are deficient in iron. These findings could be used to answer the study question: 'To what extent were the diets of special groups: children, adolescents, elderly and patients in the Saudi family taken care of?' And this line of thinking is shared quite clearly by Robertson (2001) as he indicated 'special groups such as children, adolescents, pregnant and lactating women, and old people often face problems gaining access to a healthy variety of safe foods. Safe healthy food may not be accessible to those most in need. Yet access to a safe and varied healthy diet is a fundamental human right' (2001:1371)

The evidence of change in the realm of food, dietary habits and practices through time could be perceived as a new social phenomenon. This fact was emphasised in Caplan's interpretation of food *vis-a-vis* its dynamic and its adaptation. As she said 'Food is like language its meaning can shift according to contexts of time and place, people can switch food codes, depending on with whom they are communicating at any point of time' (1997:6) Beardsworth and Keil, for example, noticed that 'while food is the source of physical energy and can be conceived of as the foundation of vitality and health, it is also recognized as having the potential to introduce disease-inducing substances or organisms into the body' (1997:153).

Gender:

After discussing the influence of age on food choice it is of value to this study to explore the effects of gender on people's food preferences in Saudi society. In the past people, used to emphasise competence as a housewife, with cooking as one expected criteria of a young bride. In fact, girls' mothers were expected to teach them certain skills, theoretically as well as practically. Moreover, people used to favour plump women rather than skinny ones. This quality was expected of women, but not men. Here it appears that gender was the determinant of this specific quality. But nowadays, this trend has changed. Young females have become

more concerned about their shape and weight. In a social climate in which slimness is equivalent to female beauty, most women in S.A. would like to be slender attempting to limit their food consumption in response to social pressures. Slimness is not only presented as attractive, but also, it is connected with success, power and other highly valued qualities. Obesity could be considered as an unhealthy sign. Another feature of gender affecting people's eating is, that in the past, women used to eat only leftovers, while men ate first. This trend can only be found these days in villages and Bedouin communities. Meanwhile, in big cities, as a customary habit and practice, women's dinner invitations and social gatherings tend to be more diverse in quantities, kinds and types of food than at men's parties or social dinners and gatherings. One has also to note that Saudi society is segregated, as far as gender is concerned. Another difference, as seen in table 5-21, is that women tend to eat between meals more frequently than men. A feasible explanation for this could be that some of the non-working women tend to gather with neighbours, especially in the mornings, and the researcher found such gatherings were quite useful, and visited several during her fieldwork.

Having explored different dimensions of changes in eating, dietary habits and practices and the general effects of these changes on the family's dietary practices, as regards age and gender, it is now imperative to shed some light on how these relate to the four residential areas of this study to see whether these differences can be attributed to the respondents' level of income and level of education.

Health:

The family is solely responsible for its members' health and diet with the main domestic functions and activities of the family depending greatly upon their sound health. The family provides food and shelter where family members can be protected from danger and disease. It also provides home nursing for sick people. Furthermore, the family is an important sociocultural institution, which makes a considerable impact either positively or negatively on its members' diet and dietary habits. Apart from the socialization process, the family can determine

behaviour and attitudes of its members if it fulfills its obligations in bringing up children in a healthy and positive atmosphere. The opposite can also be true. The family serves, first and foremost therefore, as a significant health guide. It is at the home that the child first learns how to behave. These processes extend later to the school, which has a decisive influence on an individual's future lifestyle through secondary or formal socialization. At home, the child observes the habits followed by his/her parents in eating, drinking and sleeping often emulating those habits in their daily activities. He/she considers them as good models. If parents follow a good and healthy model of behaviour, this will affect their children because much of a person's behaviour is a reflection of his/her upbringing. It is therefore, appropriate to examine the health and diet situation in the four quarters surveyed in this study to identify any differences in health socialisation practices in relation to food and eating.

Social Class and Family Diet and Practices:

The respondents' daily meals will be discussed and treated in relation to each quarter of the study area separately to enable us to form a picture of the Saudi family diet in these four quarters. Six items and elements in each of the three principal meals, will be analyzed according to the degree of their importance and consumption by the respondents.

Table 5-17 Distribution of respondents' diet in Al-Oud Quarter:

Break fast			Lunch			Dinner		
Food items	Fr.	%	Food items	Fr.	%	Food Items	Fr.	%
Eggs	34	39.5	Rice	76	88.4	Canned Food	12	14
Foul (Broad Beans)	33	38.4	Cooked Veg	67	78.0	Bread	19	22.1
Cheese	32	37.2	Chicken	38	44.2	Rice	14	16.3
Bread	31	36.0	Red meat	31	36.0	Cheese	12	14.0
Canned Food	15	17.4	Salad	26	30.2	Cooked Veg.	11	12.8
Tea	15	17.4	Fruits	18	20.9	Foul	7	8.1
Lamb's liver	6	7.0	Fish	6	7.0	Eggs	5	5.8
Corn flakes	5	5.8	Butter milk	6	7.0	Macaroni	4	4.7
Sandwiches	1	1.2	Macaroni	4	4.7	Margaug	4	4.7
Fruit Juice	1	1.2	Margaug	4	4.7	Yogurt	4	4.7
Asedah	1	1.2	Soft drinks	4	4.7	Sweets	3	3.5
Yogurt	0	0.0	Bread	3	3.5	Gursan	3	3.5
			Jareesh	2	2.3	Sandwiches	3	3.5
			Gursan	1	1.2	Fast Food	2	2.3
			Pasties	0	0.0	Jareesh	2	2.3
						Milk and Butter Milk	1	1.2
						Chicken	1	1.2
						Red meat	1	1.2
						Saleeg	1	1.2
						Pasties	0	0.0
						Fruits	0	0.0
						Fresh vegetables	0	0.0

Table 5-17 reveals the components of diet in Al-Oud. The six most consumed food items in the respondents' three principal daily meals were as follows:

Breakfast: The first item was eggs 39.5% followed by *foul* 38.4%. Third cheese 37.2%, bread fourth 36% and milk fifth 34.9%, canned food and tea sixth 17.4%.

Lunch: The first item was rice 88.4% . Cooked vegetables second 78% and chicken third 44.2% . Red meat appeared fourth 36% , while salad fifth 30.2% and fruits sixth 20.9% .

Dinner: The first item was Bread 22.1%. Rice second 16.3%. Cheese and canned food third 14%. While cooked vegetables fourth 12.8%. The fifth was *foul* 8.1% and sixth was eggs 5.8%.

Table 5-18 Distribution of respondents by their diet in Al-Worood Quarter:

Break fast			Lunch			Dinner		
Food items	Fr.	%	Food Items	Fr.	%	Food Items	Fr.	%
Milk	21	29.2	Rice	57	79.2	Canned food	21	29.2
Bread	21	29.2	Cooked vegetables	53	73.6	Bread	19	26.4
Eggs	20	27.8	Red meat	44	61.0	Rice	14	19.4
Canned food	19	26.4	Salad	40	55.6	Cheese	12	16.7
Foul	14	19.4	Chicken	39	54.2	Cooked Vegetables	11	15.3
Cheese	13	18.1	Fruits	20	27.8	Foul	7	9.7
Tea	10	13.9	Butter milk	10	13.9	Eggs	5	6.9
Comflakes	6	8.3	Soup	7	9.7	Yogurt	4	5.6
Sandwiches	6	8.3	Fish	7	9.7	Macaroni	4	5.6
Fruit juice	4	5.6	Margaug	5	6.9	Margaug	4	5.6
Lamb's liver	1	1.4	Jareesh	5	6.9	Sandwiches	3	4.2
Asedah	0	0.0	Soft drinks	4	5.6	Sweets	3	4.2
Yogurt	0	0.0	Canned food	3	4.2	Gursan	3	4.2
			Pasties	3	4.2	Fast food	2	2.8
			Macaroni	3	4.2	Jareesh	2	2.8
			Bread	2	2.8	Milk and butter Milk	1	1.4
			Marasea	1	1.4	Chicken	1	1.4
			Gursan	1	1.4	Red meat	1	1.4
						Saleeg	1	1.4
						Pasties	0	0.0
						Salad	0	0.0
						Fruits	0	0.0
						Vegetables	0	0.0

From table 5-18 in Al-Worood the six most consumed food items in respondents' three principal daily meals were:

Breakfast: The first items were milk and bread, 22.2%. Second was eggs, 27.8%, canned food third, 26.4%, and *foul* fourth, 19.4%, while cheese fifth, 18.1%, and tea sixth, 13.9%.

Lunch: The first item was rice, 79.2% . The second cooked vegetables, 73.6% . Red meat third, 61%, and salad fourth, 55.6%, while chicken fifth, 54.2%, and fruits sixth, 27.8%.

Dinner: The first item was canned food, 29.2%, and the second bread, 26.4%, while rice third, 19.4%, cheese fourth, 16.7%, and cooked vegetables fifth, 15.3%. *Foul* sixth, 9.7%.

Table 5-19 Distribution of respondents' diet in Al-Rabwah Quarter.

Break fast			Lunch			Dinner		
Food items	Fr.	%	Food items	Fr.	%	Food Items	Fr.	%
Bread	40	32.8	Rice	89	73	Bread	29	23.8
Eggs	40	32.8	Cooked vegetables	71	58.2	Canned food	23	18.9
Milk	36	29.5	Red meat	62	50.8	Milk and butter milk	20	16.4
Cheese	36	29.5	Chicken	56	45.9	Cheese	17	13.9
Canned food	20	16.4	Salad	50	41.0	Eggs	15	12.3
Foul	16	13.1	Fruits	49	40.2	Fast food	14	11.5
Sandwiches	7	5.7	Milk and butter milk	23	18.9	Macaroni	12	9.8
Fruit juice	6	4.9	Bread	12	9.8	Fresh vegetables	9	7.4
Tea	6	4.9	Fish	10	8.2	Foul	8	6.6
Yogurt	3	2.5	Macaroni	10	8.2	Pasties	8	6.6
Cornflakes	2	1.6	Soup	10	8.2	Rice	5	4.1
Lamb's liver	1	.8	Soft drinks	8	6.6	Fruits	4	3.3
Asedah	0	0.0	Margaug	4	3.3	Jareesh	4	3.3
			Jareesh	4	3.3	Chicken	3	2.5
			Gursan	3	2.5	Margoug	3	2.5
			Canned food	3	2.5	Gursan	3	2.5
			Pasties	3	2.5	Red meat	2	1.6
			Marasea	2	1.6	Salad	2	1.6
						Saleeg	2	1.6

Table 5-19 reveals that in Al-Rabwah the six most consumed food items in respondents three principal daily meals were:

Breakfast: The first items were bread and eggs sharing the same percentage, 32.8%. Milk and cheese, 29.5%, jointly second. Third canned food, 16.4%, *Foul* fourth, 13.1%. Sandwiches fifth, 5.7%. Fruit juice and tea joint sixth, 4.9%.

Lunch: The first item was rice, 73%, and second cooked vegetables, 58.2%. Red meat third, 50.8%, and chicken fourth, 45.9%. Salad fifth, 41%, while Fruits sixth, 40.2%.

Dinner: The first item was bread, 23.8%. Canned food second, 18.9%, while milk and butter milk third, 16.4%. Cheese fourth, 13.9%, and eggs fifth, 12.3%, while fast food sixth, 11.5%.

Table 5-20 Distribution of respondents' diet in King Saud University Staff Campus:

Break fast			Lunch			Dinner		
Food items	Fr.	%	Food items	Fr.	%	Food Items	Fr.	%
Bread	13	43.3	Rice	25	83.3	Bread	10	33.3
Eggs	10	33.3	Red meat	21	70	Milk& butter milk	6	20.0
Cheese	9	30.0	Fruits	21	70	Cheese	5	16.7
Milk	8	26.7	Cooked vegetables	21	70	Fruits	5	16.7
Foul	7	23.3	Chicken	15	50	Canned food	4	13.3
Canned food	7	23.3	Salad	13	43.3	Rice	3	10.0
Corn flakes	3	10.0	Milk and butter milk	6	20	Foul	3	10.0
Sandwiches	2	6.7	Macaroni	5	16.7	Fast food	3	10.0
Fruit juice	2	6.7	Fish	5	16.7	Fresh Vegetables	3	10.0
Tea	2	6.7	Bread	3	10	Chicken	2	6.7
Lamb's liver	1	3.3	Margoug	2	6.7	Red meat	2	6.7
Yogurt	0	0.0	Soft drinks	2	6.7	Pasties	2	6.7
			Soup	2	6.7	Macaroni	1	3.3
			Gursan	1	3.3	Salad	1	3.3
			Marasea	1	3.3	Margoug	0	0.0
			Pasties	1	3.3	Jareesh	0	0.0
			Canned food	0	0.0	Gursan	0	0.0
						Saleeg	0	0.0

Table 5-20% demonstrates that in King Saud University Staff Campus the six most consumed food items in the respondents' three principal daily meals were:

Breakfast: Bread was first item, 43.3%. Eggs second, 33.3%. Third cheese, 30%. Fourth milk, 26.7%, while *foul* and canned food equal fifth, 23.3%, and cornflakes sixth, 10% .

Lunch: The first item was rice, 83.3%. Second red meat, fruits and cooked vegetables all with the same percentage, 70%. Third was chicken, 50%. Salad fourth, 43.3%, and milk and butter milk fifth, 20%, while Macaroni and fish joint sixth, 16.7%.

Dinner: The first item was bread, 33.3%, and second milk and butter milk, 20%, while cheese and fruits a joint third, 16.7%. Fourth canned food, 13.3%. *Foul*, rice, fresh vegetables; and fast food joint fifth, 10%. Also chicken, red meat and pasties joint sixth, 6.7%.

It is clear from the four above tables that the average individual consumption of healthy food, particularly of fruits and fresh vegetables, was significantly higher in high income groups.

This kind of consumption can be explained in relation to the population characteristics in these

three quarters; Al-Worood, Al-Rabwah and King Saud University staff Campus. Most of them are educated and may be aware of the importance of eating fresh fruits and vegetables. Also, their income might enable them to diversify their daily diet. Furthermore, we can observe that the consumption of red meat was higher in these three quarters than Al-Oud. Chicken was consumed in Al-Oud more than in the other three quarters, possibly because chicken is cheaper than red meat. Also, for the same reason, *foul* was consumed more in Al-Oud than in the other three.

Fast food was consumed more in the other three quarters than in Al-Oud, because fast food is a new phenomenon, which is more acceptable for high and middle income people who can afford it, and who now think of going to fast food restaurants as a form of recreation. But it could also be due to the fact that most fast food restaurants are located in greater number in these three quarters, than in Al-Oud. Moreover, education has positive effects on peoples' dietary habits as shown in table 5-24 and 5-25.

Besides the three main meals a day, eating between meals is not uncommon in Saudi society and it may become a major problem through contributing to the consumption of sugar contained in sweets, ice-cream and biscuits. Regular meals are essential for good health, while snacks between meals are a potent source of extra weight. This kind of diet should be avoided and discouraged because effects of such nutritional practices are not limited to youth, where such habits are learned and remain in later life. Taking meals at regular hours is part of achieving healthy dietary habits in Saudi society.

The researcher observed, as a participant observer, that regular meal hours are not followed by many people especially during holidays and vacations. Eating snacks of poor nutritional value between meals is a common habit among many Saudi people and may cause digestive disorders and decreases appetite for the main meals.

Table 5-21 Distribution of respondents in taking some foods between main meals and how.

Family Members	Taking some foods between main meals.											
	Always		Sometimes		Rarely		Never		No Reply		Total	
	Fr.	%	Fr	%	Fr	%	Fr.	%	Fr.	%	Fr.	%
Father	26	8.4	126	40.6	103	33.2	50	16.1	5	1.6	310	100
Mother	53	17.1	171	55.2	68	21.9	15	4.8	3	1.0	310	100
Children	144	46.5	136	43.9	22	7.1	2	0.6	6	1.9	310	100

Table 5-21 shows that: fathers are the least likely to eat food between main meals. 49% always and sometimes. 33.2%, rarely and never, 16.1%. Mothers second, 72.3 %, always and sometimes, rarely 21.9%, and never 4.8%. Children third, the majority 90.4%, ate foods between main meals and only. .6% never did so. One explanation for food being eaten between main meals by women more than men is that most Saudi women are unemployed, and a sedentary lifestyle has become the norm. Visiting friends, watching TV and eating snacks such as nuts, pastries, dates and sweets are the main activities during their leisure time, which may explain the phenomenal increase in obesity among Saudi women. Information on the type of food the respondents eat between main meals were obtained through the following question: 'What are the types of food do your family members eat between main meals?' Their answers were for fathers, sweets was first, 24.5%. Second was pastries,16.1%. Fruits third, 13.6%. Nuts consumed fourth, 11.3%, while sandwiches appeared to be fifth, 5.5%. Vegetables sixth, 3.2%, and soft drinks chosen seventh, 2.3%. For mothers sweets first, 40.7%. Pastries second, 37.7%, fresh vegetables third, 27.4%, nuts fourth, 26.5%, fruits fifth, 20.3%, and sandwiches sixth, 6.8%. Soft drinks were the least consumed, 3.2%. For children, sweets first, 75.8%, followed by pastries 32.3%, and chips third 22.9%, sandwiches 22.6%, soft drinks 20.7%, fruit juice 7.4%, fruits 18.4% and the least consumed vegetable, 1.9%. When we look carefully at these figures, it is clear that for all people, sweets were the most consumed snack, followed by pastries and nuts. The excessive consumption of these food items, especially between main meals, may have

negative health effects, because of their high sugar and fat content. These findings are similar to that of King Saud University female students study (1993) confirming that most of the sample students used to have snacks like sandwiches, biscuits, chocolates and soft drinks. Al-Othaimen's study (1991) had a similar finding:

'among the in-between meals or snacks, the population ate more afternoon snacks 34% than morning snacks 31% . Only 12% ate bedtime snacks. The same pattern of eating was observed in all the regions of the study group, except in the north, where more morning snacks were eaten 28% . This is probably due to the cold weather in that region' (1991:238)

Moreover, a study about dietary habits of technical and vocational students in Riyadh showed that 'where the dietary habits of 452 young adult male students at 6 technical institutes and vocational training centres in Riyadh were investigated as part of a nutritional assessment survey, the eating between meal habit was found to be common among the majority 72.3% of the students' (Al-Sudairy A. Howard K. 1992: 271-2 cited in *Third Saudi Symposium on Food and Nutrition. 1998*)

Moreover, eating sweets is a common feature of the dietary habits which people are accustomed to in Saudi society as shown in table 5-22 which reveals that more than half of the respondents, 51.6%, their children were eating sweets every day or twice a week, 27.7%, and women's consumption of sweets was more than men's. The finding is similar to Monerah Al-Muhna's finding (2002) ' where more than 30% of Saudi people ate sweets three times a week and 10% did so everyday. While 46% ate cake and confectionery five times a week' (cited in Al-Riyadh No. 12545. 29/10/2002:8). Excessive consumption of sweets can have harmful and negative health effects such as: tooth decay, gaining weight, diabetes and other diseases.

Table 5-22 Distribution of respondents according to eating sweets.

Family Members	Eating Sweets													
	Every day		Twice a week		Once a week		Rarely		Never		No Reply		Total	
	Fr.	%	Fr.	%	Fr	%	Fr	%	Fr.	%	Fr.	%	Fr.	%
Father	22	7.1	65	21.0	74	23.9	126	40.6	18	5.8	5	1.6	310	100
Mother	38	12.3	93	30.0	89	28.7	87	28.1	3	1.0	0	0.0	310	100
Children	160	51.6	86	27.7	38	12.3	16	5.2	4	1.3	6	1.9	310	100

The increase of sugar consumption is not only in Saudi society, but also in other developed and developing countries as has been documented:

'the world consumption of sugar has increased almost four fold in the first fifty years of the twentieth century, despite wide fluctuations in the world prices. Abbot's detailed data are for the years 1972 to 1986 inclusive and document separately the consumption in developed and developing and centrally planned economies. The greatest increase in consumption was in the developing countries whose share of world consumption rose from 34 percent to approximately 45 percent' (Beardworth and Keil, 1997:247).

Moreover, Beardsworth and Keil indicated that :

'the taste for sweetness can be satisfied by the consumption, not only of refined sugar, preserves, cakes; and biscuits but also, by the consumption of a very wide range of confectionery. The demand for confectionery in the developed economies appears to be high and this is particularly true of the UK for example, figures provided by James (1990:668-9) indicated that the UK confectionery market in 1988 was worth £3,285 million, more than Bread (2,375 million) and Cereals (£ 650 million). She adds that a 1990 survey indicated that about 95 percent of the population ate chocolate confectionery at least once a day, with an average of 9.2 OZ of confectionery, being eaten per person per week in 1998' (1997:248).

Health of pre-school age children depends on quality of their diet. Home and school meals are very important for children's health. I share the same conclusion with Khashoggi, that:

'the GCC countries have experienced remarkable economic growth and noticeable social changes which have affected the nutritional status of the population including infants and young children. Severe protein-energy malnutrition has been drastically reduced. However, Micronutrient deficiency prevails. Affluence and newly acquired nutritional habits have resulted in reduction of breast-feeding periods and prevalence of dental caries' (1998:100).

Table 5-23 Distribution of respondents according to family members drinking from the same vessel during meals.

Do your family members drink from the same vessel during meals?	Fr.	%
Yes	82	26.5
No	226	72.9
No Reply	2	.6
Total	310	100

Table 5-23 reveals that the majority of respondents, 72.9%, reported that their family members never drank from the same vessel during meals while 26.5% did so. Drinking from the same vessel during meals was one of the traditional dietary habits in S.A. found on a large scale either in households between family members or at parties and festivals in the past. Nowadays it can only be seen on a very small scale, especially among illiterate people, as can be seen from the following tables. These people whose family members used to drink from the

same vessel may be unaware of the negative health effects in terms of transmission of infectious diseases.

Table 5-24 Distribution of respondents according to family members drinking from the same vessel during meals in King Saud University Campus.

Do your family members drinking from the same vessel during meals ?	Fr.	%
Yes	6	20.0
No	24	80.0
Total	30	100

Table 5-24 demonstrates that 20% of the respondents' family members drank from the same vessel. While more than two thirds of the survey sample, 80%, never did so, as they were educated and aware of the danger of using the same vessel generally, and specifically in the case of contagious diseases.

Table 5-25 Distribution of respondents according to family members drinking from the same vessel during meals in Al-Oud Quarter.

Do your family members drinking from the same vessel during meals ?	Fr.	%
Yes	39	45.3
No	46	53.5
No Reply	1	1.2
Total	86	100

This table shows that nearly half of the respondents, 45.3%, drank from the same vessel during meals, while more than half of the survey sample, 53.5%, never did so. These respondents who used to drink from the same vessel may be unaware of the dangers of drinking from the same vessel generally, and specifically in the case of contagious diseases.

Table 5-26 Distribution of respondents according to family members drinking from the same vessel during meals in Al-Rabwah Quarter.

Do your family members drink from the same vessel during meals ?	Fr.	%
Yes	26	21.3
No	95	77.9
No Reply	1	.8
Total	122	100

The survey results summarized in table 5-26 show that more than two thirds, 77.9%, of the respondents never drank from the same vessel, while 21.3% did so.

Table 5-27 Distribution of respondents according to family members drinking from the same vessel during meals in Al-Worood Quarter.

Do your family members drink from the same vessel during meals ?	Fr.	%
Yes	11	15.3
No	61	84.7
Total	72	100

Table 5-27 reveals that: the majority of respondents, 84.7%, never drank from the same vessel, while only 15.3% drank from the same vessel during meals. It is clear from these four tables above, that drinking from the same vessels during meals was more prevalent in Al-Oud than the other quarters. One can expect that it is due to the fact that the level of education is lower and the percentage of illiteracy is greater in this quarter than that of the other three quarters as shown in table 5-45.

Table 5-28 Distribution of respondents and their children washing hands before and after meals.

Do you ask your children to wash their hands before and after meal?				
Before meals.			After meals.	
	Fr.	%	Fr.	%
Yes	276	89.0	290	93.5
No	25	8.1	12	3.9
No Reply	9	2.9	8	2.6
Total	310	100	310	100

This table shows that: the majority of respondents asked their children to wash their hands before and after meals as reported by 89%, 93.5%, of the respondents respectively. Only a few respondents, 8.1% and 3.9%, never asked. This finding could be regarded as an indication of positive health awareness of these people. Early eating habits may condition eating habits for a lifetime. The most powerful arguments for modifying eating habits in childhood is that habits acquired at that time are likely to be retained in adult life.

Table 5-29 Distribution of respondents according to brushing their teeth.

How many times do you brush your teeth daily?		
	Fr.	%
Once a day	173	55.8
Twice	92	29.7
Three times	16	5.2
Never	26	8.4
No reply	3	1.0
Total	310	100

Table 5-29 shows that the majority of respondents, 55.8%, brushed their teeth once a day, while a few of the survey sample, 5.2%, did so three times a day. Respondents who never brushed their teeth numbered 8.4%. This finding could be regarded as an indication of the need for more health awareness programmes to make people know that tooth brushing and cleaning is the most effective way of preventing decay and inflammation of teeth and gums.

Table 5-30 Distribution of respondents and their children brushing teeth daily in Al-Oud Quarter.

Do you ask your children to brush their teeth?	Fr.	%
Yes	23	26.7
No	62	72.1
No Reply	1	1.2
Total	86	100

Table 5-30 shows that the majority of respondents, 72.1%, never asked their children to brush their teeth and neglected their children's teeth. Only 26.7% did so.

Table 5-31 Distribution of respondents and their children brushing teeth daily in Al-Worood Quarter.

Do you ask your children to brush their teeth?	Fr.	%
Yes	51	70.8
No	20	27.8
No Reply	1	1.4
Total	72	100

Table 5-31 demonstrates that the majority of respondents, 70.8%, asked their children to brush their teeth daily, while only 27.8% never did so.

Table 5-32 Distribution of respondents according to their children brushing teeth daily in Al-Rabwah Quarter.

Do you ask your children to brush their teeth?	Fr.	%
Yes	94	77.0
No	20	16.4
No Reply	8	6.6
Total	122	100

Table 5-32 reveals that more than two thirds of the respondents, 77%, asked their children to brush their teeth daily, while only 16.4% neglected their children's teeth and never asked.

Table 5-33 Distribution of respondents according to their children brushing teeth daily in King Saud University Staff Campus.

Do you ask your children to brush their teeth?	Fr.	%
Yes	27	90.0
No	3	10.0
Total	30	100

Table 5-33 reveals that most respondents, 90%, asked their children to brush their teeth daily. Very few 10%, neglected their children's teeth and never asked.

It is clear that the majority of educated people's children clean their teeth daily, as their parent knew that tooth brushing and cleaning is the most effective way of preventing decay and gingivitis. When we look at the four tables it is clear that it is Al-Oud where brushing teeth was least performed, while King Saud University Staff Campus was accomplished the most 90%. This can be explained by the fact that families in this campus are more educated and aware of health benefits of cleaning teeth.

Table 5-34 Respondents' level of education and children brushing their teeth daily.

Level of Education		Children brushing their teeth.		
		Yes	No	Total
Low	Fr.	32	62	94
	%	34.0	66.0	100
Medium	Fr.	53	24	77
	%	68.8	31.2	100
High	Fr.	110	20	130
	%	84.6	15.4	100
Total		195	106	301
Chi - Square = 61.900		D.F =2	P = < 0.0001	

Table 5-34 tests the relationship between level of education and children brushing their teeth. The data in this table show that there is a significant difference between level of education and children brushing teeth. Families of higher education instruct their children that tooth brushing and cleaning is the most effective way of preventive decay and inflammation of teeth and gums. For the low education group, their children did not use tooth brushes as often. But it was certainly lower than those of medium and high education groups. The higher the level of family education the more aware of dental health matters, as Campbell pointed out 'children's attitudes do vary according to the social background of the family and children's perspectives are shaped, not directly through parental instruction, but through the common experiences that a shared position in the class structure brings' (1984:163). The role of the family in relation to health and eating practices has also been pointed out (1984) by Graham:

'teaching about health is a responsibility which is accomplished intentionally or unintentionally, as part of the carer's day. In providing for family health or in treating family illness, parents are inevitably working as health educators. In getting standards of diet and hygiene for instance, parents are not only facilitating health in a biological sense, they are transmitting a culture in which health and illness can be understood. Looking after yourself and looking after children involves teaching by example' (1984:151).

So parents, especially mothers, are responsible for family health and should be given priority in health awareness campaigns (see Chapter Two). Moreover, realization of health goals requires recognition of the vital role women play in the community. Women, who constitute more than

half of the population, are the main providers of health care in their families and transmitters of good health practices to each new generation. It becomes clear from the above points that health habits do not therefore, come automatically, but children learn them from parents. They become permanent by practice and repetition. The child who is directed to wash his/her hands before and after food, and after coming out of toilet, will become accustomed to doing so. The role of the family becomes very important in health awareness of most health habits and attitudes that start at home. It is also very important to raise health standards and education of the family to enable it to bring up its children properly. After shedding some light on some dietary habits and practices it is worth considering special segments of the society, such as pregnant and breast feeding mothers. Their diet will be looked at and described very briefly.

Some Saudi families, especially in rural and Bedouin areas, do not pay attention to nutritional requirements of breast-feeding mothers and pregnant women. Their food is the same as that of other members of the family. Their health needs are not considered and such lack of nutritional care may expose them to health problems. The following table stresses this point.

Table 5-35 Distribution of respondents according to pregnant and breast feeding mother, following a specific diet .

Following a specific diet.	Fr.	%
Yes	150	48.4
No	157	50.6
No Reply	3	1.0
Total	310	100

This table shows that more than half of the respondents 50.6% reported that pregnant and breast-feeding mothers did not follow a specific diet. This finding is similar to the finding of K.A.C.S.T' study, 1995. 'the dietary practices of pregnant and lactating women did not change among 50-70% of the respondents' (1995:3). Level of education is an important factor effecting food choice and dietary habits of pregnant and breast feeding mothers as shown in the table below:

Table 5-36 shows percentage distribution of respondents' level of education and following a specific diet for pregnant and breast-feeding mothers.

Level of Education		Pregnant and breast feeding mothers following specific diet.		
		Yes	No	Total
Low	Fr. %	31 33.3	62 66.7	93 100
Medium	Fr. %	41 52.6	37 47.4	78 100
High	Fr. %	78 57.4	58 42.6	136 100
Total		150	157	307
Chi - Square = 13.327		D.F = 2	P = 0.0013	

Table 5-36 tests the relationship between level of education and pregnant or breast-feeding mothers following a specific diet. A significant difference exists between level of education groups. The level of education has a significant effect on following a specific diet. The higher the level of education the more likely to follow a specific diet, 57.4% , 52.6% and 33.3% respectively. Educated mothers are supposed to be more aware of pregnant and breast-feeding health needs. But in general, respondents' awareness of following a specific diet for pregnant or breast-feeding mothers still needs to be improved where 42.6% of educated group did not do so. This situation should be considered and readdressed in order to create a healthy generation as there is a strong relationship between healthy diet of pregnant or breast-feeding mothers and their infant's health.

Table 5-37 Distribution of respondents according to pregnant and breast feeding mother's diet.

No. of its importance	Vegetables		Fruits		Popular Dishes		Foreign Dishes		Sweets		Pastries		Milk		Soft Drinks	
	Fr.	%	Fr.	%	Fr	%	Fr	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%
1	44	14.2	26	8.4	19	6.1	3	1.0	4	1.3	2	.6	64	20.6	1	.3
2	39	12.6	54	17.4	29	9.4	5	1.6	0	0.0	1	.3	11	3.5	0	0.0
3	40	12.9	43	13.9	15	4.8	14	4.5	2	.6	4	1.3	23	7.4	0	0.0
4	9	2.9	14	4.5	50	16.1	6	1.9	7	2.3	19	6.1	22	7.1	7	2.3
5	1	.3	2	.6	6	1.9	18	5.8	33	10.6	43	13.9	8	2.6	9	2.9
6	1	.3	1	.3	5	1.6	26	8.4	39	12.6	31	10.0	2	.6	11	3.5
7	10	3.2	4	1.3	10	3.2	24	7.7	30	9.7	12	3.9	2	.6	18	5.8
8	1	.3	0	0.0	2	.6	22	7.1	8	2.6	5	1.6	6	1.9	67	21.6

Table 5-37 shows that milk is seen as the most important item in the diet of pregnant and breast feeding mother as mentioned by 20.6% of the respondents, as their first choice of importance. Fruits second, 17.4%, and vegetables third, 12.9%. Popular dishes were fourth choice, 16.1%. Pastries fifth, 13.9%, and sweets sixth 12.9%. Foreign dishes were little consumed, and soft drinks the least consumed by pregnant and breast feeding mothers, 21.6%. These findings could be regarded as a good indication of respondents' awareness of positive healthy effects of a nutritious diet for pregnant and breast-feeding mothers.

Pregnancy is associated with physical and physiological changes in the body of the mother. Therefore, pregnant and lactating mothers need special care and nutrition. Diet must be good and well balanced. Malnutrition leads to many health problems, such as Iron deficiency anaemia which is one of the main nutritional problems in Saudi Arabia. Annual Health Reports (1994,1999) indicated that 'the number of anaemia cases was 330,213 in 1994, and the number increased in 1999 to 398,138 in Health Centres (MOH) (1994:57 and 1999:83) as shown in table 1-7. Also El-Hazmi (1985) found that 'the incidence of iron deficiency was high 29% that is may be due to parasitic infection; and eating habits' (1985:101-22). Iron deficiency anaemia can be caused by nutritional deficiencies, diseases, inadequate intake of usable iron and excessive blood loss. The intake of food that inhibits iron absorption may also, play a role in prevalence of this anaemia. It is well documented that the consumption of tea inhibits absorption of iron. Tea is widely consumed in Saudi Arabia, particularly after meals. Low consumption of food rich in Vitamin C is another contributing factor as this vitamin enhances absorption of iron. Increasing the awareness of mothers towards the right food to be taken during pregnancy and lactation, and fortification of some staple foods with iron, are the main ways to decrease prevalence of iron deficiency anaemia.

Obesity among women is considered a new problem associated with affluence. Maternal obesity may contribute to the incidence of high birth weight babies, and other health problems. Williams indicated that:

'maternal obesity and overnutrition sets up the cascading events of increased blood glucose that stimulates increased fetal insulin, resulting in abnormally increased lipogenesis and excessive adipose tissue deposit. Obese mothers such as 150% overweight are at risk themselves for developing gestational diabetes, elevated blood pressure, and increased blood lipids' (1993:239-79).

Although underweight is a less common problem in the Arab Gulf countries than is overweight, it does occur to a small degree. It was found that 'the prevalence of underweight among women in the Gulf ranged from 3% to 13%' (Musaiger 1998:96). Underweight pregnant women present special weight related problems and needs, especially of inadequate total weight gain during pregnancy and the pattern of the gain. Musaiger mentioned that 'Gestational weight gain, especially during the second and third trimesters is an important determinant of adequate fetal growth. For women who were underweight prior to pregnancy, the greater the gain during pregnancy, the lower the neonatal mortality rate' (1998:95-7).

Also, gestational diabetes appears during pregnancy in many women who have no previous history of diabetes. Indicators available from health records showed that 'the prevalence of this symptom is relatively high, varying from 5% to 10%. It is well documented that gestational diabetes is associated with significant pregnancy complications such as macrosomia, prenatal mortality and premature births' (Williams 1993:239-79). There are many unsound food habits during pregnancy which may affect the weight of infants. Few mothers are interested in improving their diet during pregnancy, while Saudi women's dietary practices are not usually changed during pregnancy and lactation. As has been shown in the K.A.C.S.T.'s study (1995) mentioned in Chapter Two. Moreover, traditional beliefs related to nutrition are an important risk factor in pregnancy. For example, some mothers decrease their food intake during pregnancy, believing that extra food will cause an over large baby, while others believe that they should eat for two. Musaiger indicated that 'many pregnant women believe that the intake of iron supplement may cause enlargement of the fetus and a subsequent difficult delivery or even abortion' (1990: 259-68). In addition, social change and lifestyle are factors associated with the nutritional status of pregnant women in Saudi society. The intake of fast food and other food rich in fat has increased significantly. These factors have

led to the high increase in weight of women during pregnancy. We can conclude with Musaiger saying that 'the nutritional status of pregnant women in the GCC countries has not kept pace with the change in social, economic and health status in their countries. Nutritional disorders such as anaemia, overweight and obesity, underweight and diabetes mellitus are still common in pregnant women in this region' (1998:95-7).

After delivery¹ the mother usually stays in bed for 40 days and does not do any hard work. Her food usually consists of meat, vegetables, wheat flour, honey or dates and *helba* (*Trigonell foenum cracium*). For 40 days after delivery, herbs like black pepper will enrich her food. *Helba* is regarded as a very healthy food for the period after delivery. Not only do nursing mothers consume these foods, but also, partake with guests and visitors in whatever foodstuffs might be provided to guests, including pastries, candies, sweets and soft drinks. This practice is also, associated with low vegetable and fruit intake. Prolonged bed rest time with very little activity may lead to development of health problems, such as obesity.

Appropriate child feeding is very important for growth and development of children and for prevention of malnutrition and diseases associated with food and drinks. Another negative dietary habit is that artificial feeding is used instead of breast feeding by many Saudi mothers. For example, Al-Mazrou *et al's* study, (1991) revealed that 'bottle-feeding is started by first month in 31% and three months 77% of the children are provided with powdered milk in their study sample' (1991:178). It has been observed by the UNICEF that 'reversing the decline of breast-feeding in the developing world could save the lives of an estimated 1.5 million infants every year. Bottled babies, who are often given powdered milk over-diluted, with unsafe water in unsterile bottles, are several times more likely to die in infancy. Breast milk is the complete nourishment, safe, hygienic, inexpensive and helps fight common infections' (cited in Al-Mazrou 1991:101) The following table demonstrates type of feeding respondents' babies.

1-This social and nutritional habits did not change for many generations as it has been mentioned by Al-Aabdullatief (1989 : 180)

Table 5-38 Distribution of respondents according to the type of feeding babies.

Type of feeding babies.	Fr.	%
Bottle feeding.	67	21.6
Breast-feeding.	35	11.3
Mixed feeding.	199	64.2
No Reply.	9	2.9
Total	310	100

This table reveals that: the majority of respondents, 64.2%, were practising mixed feeding, the next group was bottle feeding, 21.6%, while the least was breast feeding, 11.3%. This finding is similar to Khoja et al's study finding ' the breast feeding rate indicates that only 31% of infant under four months of age are breast-feed. Bottle feeding is quite common; the bottle milk feeding rate shows that around 64% of infants under 12 months are receiving non-breast milk from a bottle with a nipple' (1996:11). This trend might be alarming to health agencies and those who are concerned about national health. Therefore, they ought to work harder to change this trend to natural feeding which is in accordance with WHO campaign for natural feeding as the following: ' the committee adopted a resolution recommending that exclusive breast-feeding should continue until an infant has completed six months of age and further recommended that after this age locally available and culturally suitable appropriate complementary foods should be introduced as breast-feeding continues for two years' (WHO 2001:87).

In the cities of Saudi Arabia¹, soon after birth, a new born baby is traditionally given glucose water, while in villages and Bedouin areas many mothers introduce honey, ghee and glucose water. After that, the baby is put on breast or bottle feed or mixed feeding. The practice of bottle feeding has increased as a result of modernization, as Lawson notes 'an increasing number of mothers are following the example of their Western counterparts in Bottle

¹-it has to be borne in mind that many newborn baby nutritional habits do persist unchanged within the last decade as it has been produced in Al-Abdullatief (1989 : 192).

feeding their babies instead of following the tradition of breast-feeding them' (1981 : 26).

A study about infant feeding practices in Riyadh similarly shows that 'there is a decreasing incidence of breast-feeding along with a diminishing length of nursing period' and it is highly recommended that 'a nationwide effort should be made through all available means to encourage and increase rate and duration of breast feeding' (Al-Fragh *et al.*, 1988: 194-7). In practical terms, more than two thirds of the study sample 84.5% agreed with statement 19 (Appendix A) that mothers should keep away as far as possible from bottle-feeding their babies. They are aware of negative health effects of bottle-feeding. Their concerns might arise from unhygienic methods of preparation or the amount and the kind of milk not being suitable for baby's health needs. It is clear that these people have positive health attitudes about bottle-feeding, but they might not apply them in their daily life. The findings in table 5-38 show that the number of respondents who bottle-fed were more than those who breast fed. Hygienic procedures such as cleaning bottle, quality and quantity of milk given and timing of feeding may not be strictly followed all of which might adversely affect children's health. Unfortunately, the method of bottle feeding has increased, and some mothers, especially the illiterate in Al-Oud quarter as the following table shows were ignorant about methods of preparing and sterilizing the bottle. They usually rinse it in cold water only and do not bother about covering the bottle, allowing flies and insects to contaminate the bottle and possibly convey disease to the child. They prepared the bottle in an unhygienic way which could badly affect the child's health. Al-Othaimen stressed this point as he put it ' literacy, poor hygiene, early weaning, incorrect bottle-feeding and inappropriate weaning practices were incriminated as contributory factors to child malnutrition' (1991:113) Also Haque's study (1983) in Riyadh showed that only 18% of mothers knew how to make up the feeds correctly. He emphasized the importance of correct knowledge in infant formula preparation and proper and adequate supplementation to milk. (1983:129-32). The question was asked 'if bottle feeding is used, how often do you sterilize the bottle: every time, every day, or never?' The following tables illustrate this point.

Table 5-39 Distribution of respondents according to bottle sterilization in Al-Oud Quarter:

Ways of bottle sterilization.	Fr.	%
Every time	0	0.0
Every day	13	15.1
Never	63	73.3
No Reply	10	11.6
Total	86	100

This table shows that: the majority of respondents' mothers, 73.3%, never sterilized their babies' bottles.

In Al-Worood, Al-Rabwah quarters and university staff campus most of the families had housemaids, who sometimes prepared the bottle for child . This kind of dependency which did exist 13 years ago until now, may have negative health affect as it has been brought about by Al-Abdullatief (1989) 'Most housemaids are illiterate and unaware of healthy methods of preparing and sterilizing the bottle. They prepare the bottle in an unhygienic way that can badly affect the child's health. It is very important for mothers and housemaids to have correct knowledge of infant formula preparation with proper and adequate supplementation of milk in bottle feeding to protect the child's health' (: 193) Sawaya *et al.*, (1985) focuses very convincingly on unhygienic condition of bottle-feeding 'unhygienic preparation of bottle-feeding was practised by many mothers in Saudi Arabia. Although most families have at least one refrigerator, 96.6% of mothers kept left over milk at room temperature which may lead to milk spoilage' (1985:30-3). Another unhygienic way of bottle-feeding is presented by Firebrace 'unhygienic preparation might have been done by foreign housemaids, since they are generally responsible for feeding the children, including those who have to be bottle-fed. This may affect health status of the children as these housemaids have little or no knowledge of sterilization techniques' (1983: 9-12).

Table 5-40 Distribution of respondents and their babies' bottle sterilization in Al-Rabwah Quarter.

Ways of bottle sterilization.	Fr.	%
Every time	2	1.6
Every day	89	73.0
Never	15	12.3
No Reply	16	13.1
Total	122	100

This table reveals that: about two thirds of the respondents, 73%, sterilized their babies' bottle every day, while very few 1.6%, sterilized it every time, and 12.3% of the survey sample never did so.

Table 5-41 Distribution of respondents and their babies' bottle sterilization in Al-Worood Quarter.

Ways of bottle sterilization.	Fr.	%
Every time	11	15.3
Every day	40	55.6
Never	16	22.2
No Reply	5	6.9
Total	72	100

Table 5-41 shows that: more than half of the respondents, 55.6%, sterilized their babies' bottle every day, while 15.3% sterilized it every time, and 22.2% never did so.

Table 5-42 Distribution of the respondents according to bottle sterilization in King Saud University Staff Campus.

Ways of bottle sterilization.	Fr.	%
Every time	8	26.7
Every day	16	53.3
Never	3	10.0
No Reply	3	10.0
Total	30	100

Table 5-42 illustrates that: the majority of respondents, 53.3%, sterilized their babies' bottle feeding every day, while 26.7% sterilized it every time, and only a few 10%, never did so.

Comparing these four quarters it is clear that Al-Oud had the highest percentage 73.3% of those who never sterilized their babies' feeding bottle, while King Saud University Staff Campus had the lowest at 10%. This may be due to the fact that families in this quarter are more educated and aware of health benefits of bottle sterilization for babies' health than those of Al-Oud. So level of education has a positive effect on bottle sterilization, as shown in the following table:

Table 5-43 Percentage distribution of the respondents' level of education and bottle sterilization .

Level of Education		Every time	Every day	Never	Total
Low	Fr.	1	27	56	84
	%	1.2	32.1	66.7	100
Medium	Fr.	4	42	22	68
	%	5.9	61.8	32.3	100
High	Fr.	16	89	19	124
	%	12.9	71.8	15.3	100
Total		21	158	97	276
Chi-Square = 61.206		D.F =4	P = < 0.0001		

Table 5-43 tests the relationship between level of education and bottle-feeding sterilization. A significant difference exists between level of education groups. In general the practice of bottle feeding sterilization every time is considerably low in all categories. This situation might impose a health hazard to infants' health. In addition to that, several months of hot climate in Riyadh aggravate this condition. Therefore, continuous health care and attention becomes a crucial need. But as far as education is concerned this table shows a significant difference between level of education and bottle feeding sterilization. 71.8% of educated people sterilized the bottle every day. Compared to 61.8% and 32.1% for those of medium and low educated groups. The higher the level of education the more knowledge about the health benefit of bottle sterilization. Unhygienic preparation of bottle feeding, and illiteracy seems to play an important role in the increase of incidents of various infant's diseases as Musaiger found that:

'Gastroenteritis is considered to be one of the common diseases prevalent among infants and young children in the Gulf countries. The increase in the practice of bottle-feeding is more likely to raise the incidence of gastroenteritis among these children. Illiteracy, ignorance, and unhygienic preparation of infant feeds are the main reasons for the prevalence of gastroenteritis in these countries' (1996 :140).

The following studies demonstrated that the above nutritional condition was prevalent 20 years ago and still exists with some improvement. The studies on food habits and practices involving the families of Armed Forces personnel indicated that:

'many infants and young children at Riyadh Military Hospital were suffering from malnutrition as a primary or secondary disorder. Breast-feeding practices showed that 72% of babies were entirely breast-fed at the end of the first week, while 16% were receiving supplementary feeds and 12% were receiving bottle milk only at this age. By the third month, only 42% of babies were entirely breast-fed and this decreased further to 11% by one year. The introduction of solid foods to infants was started at three months at the earliest, and two years at the latest. The usual age for introducing supplements was from five to seven months. Illiteracy, poor hygiene, early weaning, incorrect bottle-feeding and inappropriate weaning practices were incriminated as contributory factors to child malnutrition' (Lawson, 1981: 26-9).

A similar study in the Civil Hospital in the Khamis-Mushayat, (in South West of the Kingdom) in 1986 showed a decline in the trend of breast-feeding among 368 rural mothers surveyed. Moreover, Chowdhury (1989) affirmed this condition:

'of the 368 children studied, 75% were exclusively breast-fed at birth and only about 47% continued to be breast-fed at six months of age. The same percentage of babies were bottle-fed at six months. The rest were fed by breast and bottle combined. Out of 185 babies being bottle-fed by six months of age 47% only 41 (22%) received properly prepared formula. Formula was too diluted for 92 infants 50% and too concentrated for 52 (28%). About half were not being given proper cleaned or sterilized bottles, and the majority of mothers were using only one bottle. Many infants were given supplementary foods at a late age and most of the mothers did not have any idea about the right age for weaning or the proper foods for weaning' (1989:19-22).

It was observed that this late and inadequate supplementation is a common problem in developing countries and is a major cause of malnutrition. Good nutrition will lead to good health. The influence of diet extends back through infancy and the pre-natal period to the health of the mother. Food plays a particularly important role in child health with quality of diet, serving to increase or decrease child's resistance to illness. Obaid 1998 pointed to this in the following lines:

'the Community of Cancer Researches, World Health Organization, confirms that the type of diet that a child used to have during his early childhood is largely responsible for his susceptibility to expose cancer in future. Thus, if a child used to take small amounts of fats and animal products and high volume of high fiber food, the less likely he will expose to cancer and vice versa. For this reason (WHO) recommend breast-feeding. This is true because the mother's milk contains all essential nutrients that are required for the child growth. It is easy to digest and very rich in antibodies that immune that child against many diseases' (*Al Hayat newspaper, No. 13031, 7/11/1998:4*).

Furthermore, early weaning of the child to force him/her to be accustomed to family food is a practice used by many Saudi families. This may cause nutritional deficiency diseases and this lack of his/her nutritional requirement may lead to some diseases like osteomalacia and rickets, resulting from deficiency of Vitamin D. At the age of seven or ten months, mother's milk or bottle milk becomes relatively insufficient for development of the child. Therefore, other foods must be added gradually to supplement the milk. The child¹ is first introduced slowly to semi solid food, then gradually to solid food from the family's meals. Some mothers lack of knowledge about supplementary food might be one of the main causes of malnutrition, and they need to know how to use locally available food correctly to supplement child feeding. For example, in the Eastern Province, health workers reported that 'malnutrition amongst children was cultural and not due to economic deprivation nor to the non-availability of local foodstuffs of adequate nutrient quality' (Al-Shammasi, 1986:297). Following Islamic teachings at exactly two years of age, the child should be weaned and prevented from breast-feeding. Sometimes a child is weaned before reaching his second birthday, if the mother is pregnant or does not want to continue breast-feeding for some reason. After two years the child is allowed to eat any kind of food and sits with family members for all three meals. Generally speaking, children grow up in a family environment. Needless to say, such an environment could help the child to grow up in an atmosphere of love comfort and care. It also, helps him/her to attain proper mental and physical growth. The family serves as first and most significant health guide and that is most evident if the parents are well educated.

Family and Education:

In general education could be seen and considered as the most conspicuous vehicle to induce change in all aspects of society. The study findings can be used to support this assumption. The following tables could be looked at as practical proof of the impact of

1-The exposition of children dietary practices which appeared in A-Abdullatief's study (1989 :193) is quite valid for this study as these practices are still nearly the same.

education on all aspects of the society in general, and in the realm of health, diet, dietary habits and practices in particular. It is therefore, of great importance to explore the impact of education in facilitating changes and improvements in food and dietary habits for education, as one of the most crucial social institutions, can be a determining factor in shaping and changing the Saudi diet and dietary habits.

Table 5-44 Distribution of respondents and level of education.

Level of Education.	Fr.	%
Illiterate	32	10.3
No formal education	28	9.0
Elementary	35	11.3
Intermediate	32	10.3
Secondary	47	15.2
Graduate	94	30.3
Postgraduate	42	13.6
Total	310	100

Table 5-44 shows that: 10.3% of the respondents were illiterate, and 9.3% had no formal education. The percentage of that who had completed elementary school was 11.3%. Respondents who reported that they had completed either Intermediate or secondary education were 25.5%. The numbers who graduated and postgraduated were 43.9%. Education tends to broaden knowledge and understanding of people, and therefore, families may be more prepared to undertake responsibility for looking after the health of their children. If a person achieves a higher level of education, it may help him/her to understand more about health and nutritional matters. This is underlined by Kary's study (1989) which showed that 'Saudi women especially educated ones, have some knowledge of issues related to health and their children's health' (1989) in the case of Saudi society, the illiteracy rate is high, especially among women. The Population Atlas indicated that 'the illiteracy rate among males was 65.2% while the percentage is higher among females 85.7%' (1974:27). Also a survey conducted by K.A.C.S.T revealed that 'illiteracy rate among the total sample (19,598 all over the Kingdom) is 20.6% and it is more among the females 72.2% as compared with males 27.9%' (1995:4). Certainly,

this high rate of illiteracy among women will have a negative effect on food choice and dietary habits, given that, traditionally, in the Saudi family it is women who choose and prepare meals for their families. For this reason education authorities in general and sociologists in particular ought to look at and treat illiteracy as a cultural and social reality. And in this study one has to look at it from a health and food perspective. Therefore, it is worth exposing that reality briefly. Illiteracy may impede improvement in dietary habits and nutritional consumption by spreading incorrect knowledge and wrong beliefs about food, as well as adopting of unhealthy habits and dietary practices. Illiteracy may for example, mean people are ignorant of nutritional value of food and the need for a balanced diet could prevent people from utilizing maximum food value, in spite of food availability. Illiteracy may also, mean that people are unaware of the hygienic way of preparing food, which could lead to many diseases. However, through education, people can develop their knowledge about nutrition in terms of calories, fats, cholesterol, vitamins, calcium and other minerals. Furthermore, illiteracy leads people to be unaware of the importance of a balanced diet and hence of avoiding unsafe dietary habits. In this sense, it could be assumed that educated people are capable to make a sound rational and healthy nutritional choice and decision when it comes to fashions and new food, while illiterate people tend to have very limited choices in their decisions. Being illiterate carries a social and cultural stigma as it impedes the society's development and change. Therefore, illiteracy eradication programmes for mothers should be the cornerstone in dietary awareness programmes.

Table 5-45 Distribution of respondents and level of education in Al-Oud Quarter.

Level of Education.	Fr.	%
Illiterate	24	27.9
No formal education	19	22.1
Elementary	22	25.6
Intermediate	15	17.4
Secondary	5	5.8
Graduate	1	1.2
Postgraduate	0	0.0
Total	86	100

Table 5-45 shows that: 50% of the respondents in Al-Oud were illiterate or had no formal education while only 1.2% had graduated from university. None of them had obtained post-graduate degrees. The illiteracy rate in this quarter was higher than in the other three quarters as shown in the following tables. The researcher found that most respondents in this quarter had no knowledge of nutritional values of their diet. Therefore, level of education should be improved to counteract the strong socio-cultural habits continuing.

Table 5-46 Distribution of respondents and level of education in King Saud University staff campus*.

Level of Education.	Fr.	%
Illiterate	0	0.0
No formal education	0	0.0
Elementary	0	0.0
Intermediate	0	0.0
Secondary	5	16.7*
Graduate	11	36.7
Postgraduate	14	46.7
Total	30	100

The data in table 5-46 show that all people in this quarter were educated and 83.4% had obtained graduate or post-graduate degrees. Educational achievements plays a significant role in determining other socio-economic variables in general and health and dietary awareness in particular.

Table 5-47 Distribution of the respondents and level of education in Al-Worood Quarter.

Level of Education.	Fr.	%
Illiterate	6	8.3
No formal education	3	4.2
Elementary	5	6.9
Intermediate	6	8.3
Secondary	13	18.1
Graduate	21	29.2
Post-graduate	18	25.0
Total	72	100

* (16.7) of King Saudi University staff campus respondents are employees in the University administration.

This table shows that 12.5% of the respondents in this quarter were illiterate or had no formal education and 54.2% were either graduates or post-graduates. In this quarter, illiteracy rate was lower than Al-Rabwah and Al-Oud quarters. Health education tries to make people more aware of the usefulness of a healthy diet and dietary habits and encourages them to take their own decisions, both individually and collectively. Moreover, it supposes to improve their diet, health status and environment and to have a significant impact on the future development of Saudi society.

Table 5-48 Distribution of respondents by level of education in Al-Rabwah quarter.

Level of Education.	Fr.	%
Illiterate	15	12.3
No formal education	12	9.8
Elementary	17	13.9
Intermediate	13	10.7
Secondary	15	12.3
Graduate	42	34.4
Postgraduate	8	6.6
Total	122	100

It is clear from this table that: 22.1% of the respondents were illiterate or had no formal education, while 41% had obtained graduate or post-graduate degrees.

Looking at tables 5-45 , 5-46, 5-47 and 5-48 giving the educational levels of the study respondents in the four quarters respectively, Al-Oud, King Saud University staff campus, Al-Worood; and Al-Rabwah, it brings out that Al-Oud has the highest percentage of illiteracy of all four quarters, it might be anticipated that this might have some effects in general terms and on people's diet, dietary habits and practices in particular, since education plays a vital role in shaping people's diet, dietary habits and practices.

Table 5-49 Respondents' level of education and changing in diet, dietary habits and practices.

Level of Education		Change in diet			Change in dietary habits		
		Yes	No	Total	Yes	No	Total
Low	Fr.	60	33	93	49	44	93
	%	64.5	35.5	100	52.7	47.3	100
Medium	Fr.	56	22	78	50	29	79
	%	71.8	28.2	100	63.3	36.7	100
High	Fr.	105	28	133	95	37	132
	%	78.9	21.1	100	72.0	28.0	100
Total		221	83	304	194	110	304
Chi-Square = 5.786 D.F. = 2 P = 0.0554				Chi-Square = 8.797 D.F = 2 P = 0.0123			

Change in diet and dietary habits can be noticed quite clearly in all segments of the society. More than half of each category admitted changing their diet and dietary habits. Table 5-49 (1,2) show that: education not significant for change in diet but is significant for change in dietary habits. This situation could mean that educational nutritional programmes are in need to be improved to inhibit information flow and social progress.

Table 5-50 Percentage distribution of respondents' level of education and reading the date of canned food.

Level of Education		Reading the date of canned food.				
		Always	Some times	Rarely	Never	Total
Low	Fr.	60	19	8	7	94
	%	63.8	20.2	8.5	7.5	100
Medium	Fr.	62	12	1	1	76
	%	81.6	15.8	1.3	1.3	100
High	Fr.	110	21	4	0	135
	%	81.5	15.6	2.9	0.0	100
Total		232	52	13	8	305
Chi-Square = 21.912		D.F = 6		P= 0.001		

Table 5-50 tests the relationship between level of education and reading the date on canned food. It appears that 63.8% of the respondents with low level of education always read the date on canned food while 81.5% of high level of education did so. it is evident that a

significant difference exists between level of education groups. Thus it is expected that the higher the educational level the greater appreciation of health benefits of reading the date on canned food. But those people who rarely or never read must be put in serious consideration in order to improve their nutritional health awareness in particular and health condition in general.

Table 5-51 Distribution of respondents according to their main concern in buying food product.

Number	Country of Production		Way of Packing		Ingredients		Instruction of usage		Outer appearance		Relation to certain advertisement		Date of Expiration		Price	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%
1	81	26.1	35	11.3	98	31.6	28	9.0	22	7.1	20	6.5	127	41.0	78	25.2
2	36	11.6	21	6.8	58	18.7	6	1.9	7	2.3	15	4.8	56	18.1	30	9.7
3	45	14.5	24	7.7	41	13.2	40	12.9	11	3.5	8	2.6	20	6.5	29	9.4
4	34	11.0	35	11.3	26	8.4	34	11.0	9	2.9	10	3.2	13	4.2	36	11.6
5	18	5.8	23	7.4	14	4.5	27	8.7	26	8.4	17	5.5	23	7.4	36	11.6
6	8	2.6	29	9.4	9	2.9	26	8.4	29	9.4	23	7.4	10	3.9	24	7.7
7	16	5.2	22	7.1	7	2.3	19	6.1	43	13.9	28	9.0	9	2.9	11	3.5
8	9	2.9	12	3.9	4	1.3	21	6.8	23	7.4	48	15.5	7	2.3	20	6.5

The survey results summarized in table 5-51 show that: in general date of expiration was the greatest concern in buying food products being chosen as the first concern for 41% of the respondents. Second concern was the ingredients, 18.7%, third choice country of production as stated by 14.5% of the respondents, fourth was price of food production, but only mentioned by 11.6% of the survey sample. The joint sixth were the way of packing and outer appearance, 9.4%. Also, outer appearance appeared seventh, 13.9%. While relation to a certain advertisement came eighth in concern, 15.5%, and instruction of usage was the least concern. A feeling of trust or distrust may exist toward the products of some countries or nations and that is applicable to some degree in people's preference in buying certain products. It is clear from this table that date of expiration, ingredient and country of production were of most concern to respondents in buying food products. This could be regarded as a good sign for positive concern and health awareness of respondents.

Table 5-52 Level of education of respondents and reading books and Magazines about health matter:

Level of Education		How often do you read books and magazines about health and diet?				
		Always	Sometimes	Rarely	Never	Total
Low	Fr. %	0 0.0	20 21.1	14 14.7	61 64.2	95 100
Medium	Fr. %	3 3.8	37 46.8	21 26.6	18 22.8	79 100
High	Fr. %	11 8.1	76 55.9	35 25.7	14 10.3	136 100
Total		14	133	70	93	310
Chi- Square= 84.204		D.F=6		P = <0.0001		

Reading in general nutritional and health matters should be part of people's daily activities and habits. But looking at table 5.52 it shows that: only 8.1% of educated people read always. This percentage is very seriously low and ought to be higher in order to maintain a healthy society. But as far as level of education is concerned, there is a significant difference between level of education groups. This table indicates a substantial difference between level of education and reading books and magazines about health matters. The higher the level of education the more reading is done. 10.3% of high level of education group never read while 64.2% of the low education group never did so. However, one would expect persons of low education to be associated with less reading and understanding especially in medical and nutritional subjects¹.

Table 5-53 Percentage distribution of respondents' level of education and buying simple health, nutrition and hygiene books for children.

Level of Education		Do you buy simple health, nutrition, and hygiene books for your children ?				
		Always	Sometimes	Rarely	Never	Total
Low	Fr. %	1 1.1	4 4.3	7 7.5	81 87.1	93 100
Medium	Fr. %	3 3.8	14 17.7	15 19.0	47 59.5	79 100
High	Fr. %	14 10.6	33 25.0	31 23.5	54 40.9	132 100
Total		18	51	53	182	304
Chi- Square= 50.735		D.F=6		P = < 0.000		

1-This finding is similar to that of Al-Abdullatief (1989 :121) and the explanation of these results are applicable for all of them.

Reading habits and buying health books appears to be very limited in Saudi society in general. That is quite evident in this table where percentages of respondents never bought these books was higher than those who did so. It is expected that education might play an important role in reading and buying health and nutritional books. Table 5-53 tests the relationship between level of education and purchasing simple health, nutrition and hygienic books for children. A significant difference exists between level of education groups. 35.6% of the respondents with high level of education tended to buy these books either always or sometimes. While 5.4% of low education category did so. And 87.1% never bought these books. In contrast to 40.9% of those with high level of education never did so. This fact could be attributed to two causal justifications. The acute shortage of children's books, especially on nutrition and health matters in Saudi Arabia. And economic affordability for all categories. In addition to that, low educated people usually do not appreciate the positive value of providing such books for their children. Moreover, education is closely associated with health occupation, income and social prestige. The following tables illustrate this point.

Table 5-54 Respondents level of education and level of income.

Level of Education		Level of Income			
		Low	Average	High	Total
Low	Fr. %	61 66.3	18 19.6	13 14.1	92 100
Medium	Fr. %	16 20.3	28 35.4	35 44.3	79 100
High	Fr. %	3 2.2	36 26.7	96 71.1	135 100
Total		80	82	144	306
Chi-Square = 129.276		D.F = 4	P = <0.0001		

Table 5-54 tests the relationship between level of education and level of income. A significant difference exists between level of education groups. Those with a low level of education account for most of the variation from expectation with most of them 66.3% having a low income and a few 14.1% receiving high income. While 71.1% of those with high level of

education had high income and few 2.2% had low income. One¹ would expect low education to be associated with low income. Overall the table shows a clustering at the medium income level with more highly educated and fewer low education respondents in this income bracket. The higher the education level the higher the income as expected. These findings could be used to answer the study question "does educational level have any impact on family nutrition and dietary habits?" It is clear that a person's educational level definitely influences his/her health and dietary habits. The level of parents' education is particularly important in transmission of positive concepts of diet and health awareness to their children. From the researcher's own experience in this study, this conclusion could be accepted as being applicable in Saudi Arabia.

Conclusion:

In this chapter, different dimensions of the change in the Saudi family were explored in order to pinpoint to what extent have the Saudi family structure and its functions been affected and changed? And what impact has this had on the Saudi family's health, diet, dietary habits and practices. The key factors identified are age, gender and education. There is a positive correlation between educational level of adults and their own health, dietary beliefs and behaviour. As this study's results show, there is a significant relationship between level of education and reading date on canned food, reading books and magazines about health and diet, buying simple health, nutrition and hygiene books for children, children brushing their teeth, baby's bottle sterilization and following specific diet for pregnant and breast-feeding mothers and change in dietary habits.

It is worth noticing that some differences were found between families of the four quarters of the study as far as eating and drinking from the same vessel is concerned. Also,

1- Comparing these two above results with those of Al-Abdullatief's (1989 :122,108). It is clear that there is a significant relationship between level of education and income and buying health books in all of them. Therefore, they have the same justification.

differences appear between families in the four quarters in their daily habits and practices of brushing teeth and bottle sterilizing. Using comparison between families in these four quarters, it was found that people in Al-Oud tend to eat and drink from same vessels during meals more than they do in the other three quarters, while brushing teeth and bottle sterilizing as daily habits and practices of Al-Oud are lower than that of the other three quarters. It was suggested that the causes of these differences could be attributed to the low levels of income and education in Al-Oud, compared to the other three-quarters. See Chapter Three tables (3-9, 3-10, 3-11 and 3-12) and tables (5-45, 5-46, 5-47 and 5-48).

Saudi society and its different social segments or sections are affected by various external and powerful impacts and influences through satellite channels, mass-media, new technological appliances and the emergence of fast food restaurants, foreign workers and cooks, having their effects on family's functions in general and on family's diet and dietary habits and practices in particular. In spite of these changes, the family still plays a major role in providing health and dietary knowledge and practices to its members in general and children and adolescents in particular. The importance of the family must therefore, be reflected in the organization and delivery of health services for children. For example, physicians and all health workers should consider themselves as associates of parents and be prepared to give them clear guidance and advice about children's health, diet and dietary habits and about what parents can do to protect and promote family health, diet and dietary habits, as Graham pointed out in relation to the U.K.:

'a theme of the 1976 Court Report on the Child Health Services, for example, was the need for professionals to share rather than deliver health education and health care. More recently, the court's emphasis on developing a partnership between parents and professionals has been subsumed within a wider economic strategy on health and welfare. Health policy in the 1980's is concerned with shifting rather than sharing responsibilities for health care. The emphasis today is less on what professionals can do for families, and more on what families supported by voluntary efforts in the community, can do for themselves' (1984:17-18).

Therefore, understanding children's feeding patterns and the variables influencing it in any country is essential for appropriate child care and nutrition, maternal training and planning of

any strategy for child welfare. We can conclude with Nakajima saying that 'the progress and achievements of the past 50 years are solid foundations for a healthier and better world. It is already time to build on them. Life in the 21st century could and should be better for all. We can pass no greater gift to the next generation than a healthier future' (WHO. 1998:6).

Chapter Six

HEALTH EDUCATION

Introduction:

Works in this chapter develops ideas initially discussed in Al-Abdullatif (1989) but applies new empirical data to them. Health education is very important, not only to protect people from immediate health dangers, but also, to develop more positive health behaviour. However, the diffusion of scientific knowledge about maintaining and promoting good diet and health is not sufficient in itself. People must be aware of how to change the habits and customs which are harmful to health and be willing to do so. Permanent reduction of diseases will be possible only if changes in the patterns of community behaviour can be achieved. Thus expansion of health services, as in many parts of Saudi Arabia, may not by itself lead to lasting improvement of general health unless reinforced by a health education programme which aims to raise standards of diet and dietary habits, personal and public hygiene. Health education is thus an essential element in all health services to encourage the community to promote and use health services wisely.

Tuckett (1976) addressed the choices for health education from a sociological perspective. He distinguished three main reasons for health education as being (a) to act as a branch of preventive medicine (b) to facilitate effective use of health care resources and (c) to provide general education for health' (1976:55). The difficulty of health promotion is that it has to be able to appeal to people with different levels of understanding, culture and education. Moreover, techniques of health education must be adapted to suit the capabilities of a particular community. This reinforces the need for the educator to consider the social context from which students came for health educators have successful understanding of the ways of life in the community.

Defining Health Education and Promotion:

Health education is not a new concept. Confusion exists because it has different meanings in different contexts and these have changed over time. According to Ibrahim Fouad 'health education is the process of teaching the public groups of people or individuals the basic knowledge of health, and attempting creation of health consciousness which is interpreted into sound health behaviour' (1983:77). But Ludwi thinks of health education differently as:

'Health education, as a process, is the provision of learning experiences as to express the purpose which favourably influence knowledge, attitudes and practices to make possible the intelligent self-direction of health behaviour'. Health education as a result is the sum of experiences in school and elsewhere which favourably influence habits, attitudes and knowledge relating to individual and community health' (Cited in Bustani, 1981:19.)

This definition is general and could be applied to any society. This accords with research objectives of this study, because it includes people's process of learning through formal channels, such as school, as well as through their daily life. One cannot look at the process of learning from formal educational channels only, one also has to consider people's daily life, as this is a paramount force in determining their learning process. The process of health education is based on three integrated methods:

1- Direct contact (or face to face) education. 2- Community organisation. 3- Mass-communication (information channels).

Health education should continue throughout all phases of life, being passed from generation to generation. It is, therefore, ideally part of socialization. People like physicians, dentists, psychiatrists, nurses, teachers, health workers, parents and many others are all involved directly or indirectly in promoting health in their societies. Health promotion did not grow in a vacuum but developed largely out of the need for health education and in tandem with the development of the new public health movement. Moreover, it aims to work not only at the level of individuals,

but also, for socio-economic structures and to encourage the creation and implementation of healthy public policies such as those concerned with environment and agriculture and so on.

Parish (1995) mentioned that 'the term ' health promotion' was virtually unknown until the late 1970s. It reached remarkable prominence, however, in less than a decade, and now figures as a key policy issue on the agenda of many nations, particularly those in the western industrialized world' (1995:13). It is also crucial to the developing countries as well. For this reason, exposing the definition of health promotion and its objectives would be useful for this study, for instance, Anderson (1983) defined health promotion as the following: ' any combination of health education and related organisational, political and economic intervention designed to facilitate behavioural and environmental adaptations which will improve or protect health' (1983:11). Moreover, Bennett and Hodgson indicated that 'the objectives of health promotion are necessarily diverse and complex incorporating behavioural, social, environmental, political and economic goals' (1992:23) Health development in communities should be made not only for people but by the people. It is often concerned with changing attitudes and actions of people or organizations in a position to influence behaviour. Bennett and Hodgson mentioned ' if behaviour is modifiable using health promotion methods a large percentage of the population will have health benefits from making appropriate behavioural changes' (1992:38) . In addition to that, endemic diseases and low health standards in many developing countries are not only the consequence of a lack of medical services and protective care, but also, a by-product of ignorance among individuals about their diet and how to keep themselves healthy and be responsible for health protection. Raising health standards is thus not only dependent on what the government delivers to the public by law and regulation, but also, upon what citizens do for themselves. No successful solution can be reached for these health problems without positive participation by all citizens. Individual participation in improving diet and health standards is

based on their education, to make them aware of proper diet and health methods. However, learning about health is not limited to a specific educational situation but involves a wide variety of experiences in relation to dietary habits at home, school and in the community. This Chapter will examine different sources of knowledge about food and diet.

Health Education's Objectives and Goals:

The aim of health education is to help people to improve, achieve and maintain health by their own actions and efforts. It begins, therefore, with the interest of people in improving their living conditions and aims to develop a sense of responsibility for their own diet and health betterment as individuals and as members of families, communities or society.

Diet, dietary habits and health are important elements in the general welfare of the people, and health education is only one of the factors in improving diet, dietary habits, health and social conditions. It is, however, an indispensable factor and should therefore, be integrated with other social, economic and educational efforts. Ibrahim Fouad put forward many objectives for health education as follows:

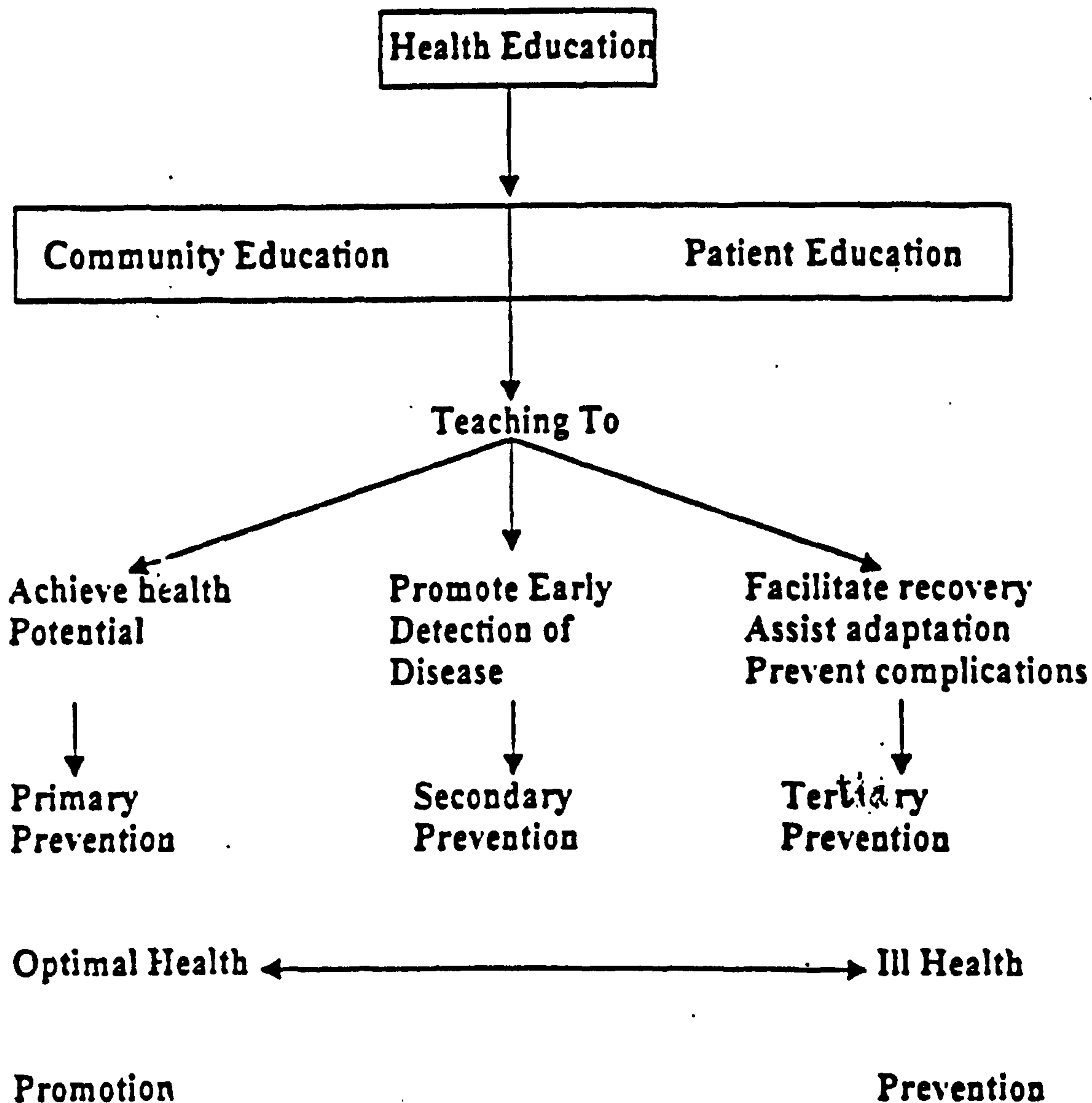
1. To arouse the interest of the public in health, and give them simplified knowledge of the determinants and requirements of health.
2. To make the public aware of the community health problems and how they could be managed.
Also, people should be aware of public health needs and how they can be satisfied.
3. To change traditional beliefs, practices and behaviour, related to diet, dietary habit, and health.
4. To motivate the public to follow sound health behaviour and show active participation and cooperation to solve health problems and verify health needs of the community' (Fouad 1983:77).

Also, Coutts and Hardy put down many other purposes of health education as follows:

1. Contribute to self-fulfilment of individuals and promote their well-being as individuals and to promote their well-being as individuals define this.
2. Enhance the ability of people to cope effectively with health promotion, health maintenance and illness control.
3. Reduce undesired risks of disease and illness.
4. Help people maintain personal and civil integrity while receiving health care.
5. Create more active individual and community participation in health systems by increasing, (a) personal competence in self-care, and (b) social skills in working within the formal health system. (Coutts and Hardy 1985:12).

The main purpose of health education is to promote health. The relationship of health education and health promotion is shown in figure (6-1). However, in relation to dietary practices. Fine and Wright discuss the failings of current health education models based on the concept of 'the trickle down' of nutritional information. The assumption that information decides food choice ignores the fact that consumers can not determine which foods are available in the food system.

Figure (6-1) The relationship of health education and health promotion



Lyn, Counts and Leslie, Hardy 1985:15

It also neglects the existence of diverse informal sources of knowledge including retailing practices and advertising' (Cited in Keane 1997:178). People need to be aware of their diet, irrespective of their educational level and economic and social status. The review by Whitehead found that 'nutrition education was directed to disseminate nutrition information in order to improve food habits. This approach was effective in increasing knowledge but did not have any effect in changing dietary behaviour or practices' (1973:91-149). The objective of a dietitian working in the field of nutrition education must be to promote a better understanding of nutrition and health so that the general public will have a clearer appreciation of the importance of lifestyle to health. And surely it is to get people to change poor dietary habits.

In order to create a well balanced nutrition and health condition a serious consideration should be taken of the educational system at large. Because, through it individual as well as society's attitude perception and cultural apparatus could be shaped and formed. In this line of thinking and assumption, WHO stressed more precisely some educational system's responsibilities as follows: (1) Nutritional education as part of the school curricula (2) using primary school teachers as nutrition motivators in the community. (3) School meal programme to improve the nutritional intake of school children. (4) Nutrition training for girls in home sciences courses in secondary school and university. (5) Integrated nutritional care of pre-school children (6) Non-formal education of women, including child care and feeding. (7) Adult literacy programme for women (8) Creating nutrition awareness among the population through the mass-media' (WHO 1990 : 44-5).

Role of Mass-Media:

In order to examine the impact of mass-media on public awareness I shall discuss the effects of mass-media in some detail. Mass-media play an essential part in strengthening a wide range of relationships within society. They have come to be seen as playing a comparable part in mediating relationships between nation states. They are a powerful means of disseminating information and new ideas. They can contribute to raising the general level of knowledge about

diet and health. Mass-media are becoming increasingly important in shaping our knowledge, perception and our behaviour because we live in a mass communication age.

There are a number of major functions that the media can perform in the field of health.

According to a WHO Expert Committee:

'their most important role is to help create a political will in favour of health by appealing to the policy makers. While material prepared with this objective in mind is aimed at those in high positions, it can also help form public opinion. The second role is concerned with raising the awareness of the people and helping to set norms that have a strong bearing on health. Many illnesses are due to inappropriate life-styles or to changing technological conditions. The media can help foster an objective debate on such issues and can enable individuals and the society at large to make informed decisions. The third major role of the media is to inform decision-makers about the latest developments in and the limitations of health sciences and health care. This also involves monitoring the impact of development programmes on the health of the people and publicizing successful approaches so that they can be repeated elsewhere. Finally, the mass-media can help in fostering community involvement by reflecting public opinion, by encouraging dialogue between the community and the health care providers and by facilitating the feed-back to decision-makers' (1983:28)

One cannot therefore, ignore the role of mass-media in introducing either positively, or negatively, patterns of diet, dietary habits and behaviour. Testing the above assertion to see its applicability, the researcher formulated certain statements which were put to the study respondents in order to find out their opinion about mass-media and its role in shaping and changing their diet and dietary habits. In response to statement 35 (Appendix A) 94.5% of the survey sample agreed that food advertising must be monitored and properly directed in order to bring about good public health understanding for individual, family and society. Advertising may influence choice of brand name or specific commodity within an already desired category of items. This can be seen in the case of Saudi Arabia where many children might be said to significantly increase their consumption of low nutritional value food and beverages after watching television advertisements. More than two thirds 81% of the respondents thought that food advertisements have unhealthy effects on the family's food, especially that of children. Also, there was strong agreement 84.2% among the respondents that TV food advertisements concentrate on unhealthy rather than healthy food stuffs. The following table illustrates this point:

Table 6-1: Distribution of respondents according to their family members watching food and drinks TV advertisements.

Watching food and drinks TV ads	Always		Sometimes		Rarely		Never		Not Applicable		No Reply		Total	
	Fr.	%	Fr	%	Fr	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%
Family Members														
Father	35	11.3	116	37.4	95	30.6	41	13.2	19	6.1	4	1.3	310	100
Mother	64	20.6	152	49.0	61	19.7	23	7.4	10	3.2	0	0.0	310	100
Children	151	48.7	115	37.1	24	7.7	3	1.0	9	2.9	8	2.6	310	100

The survey results summarized in table 6-1 show that: children were the main family members who always watched food and drink TV advertisements, 48.7%, and mothers second, 20.6%. Fathers less often watched them. Children's watching of these advertisements might influence their food choice, because commercial advertisements may increase children's desire to purchase certain unhealthy food products, like sweets, soft drinks and other junk food. This effect is clearly evident in the family's actual consumption of soft drinks and sweets as far as this study is concern as shown in tables 4-8 and 5-22. The respondents were asked about the effects of advertisements on their family health: 'What effects do you think these advertisements have on the health of your family members?' The answers are represented in the following table:

Table 6-2: Distribution of respondents according to their opinion about the effects of food and drinks TV advertisements on the family health.

TV Ads effects	Very Useful		Fairly Useful		Not Useful		Harmful		Do not know		No Reply		Total	
	Fr.	%	Fr	%	Fr	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%
Family Members														
Father	19	6.1	100	32.2	74	23.9	11	3.5	33	10.6	73	23.5	310	100
Mother	25	8.1	129	41.6	77	24.8	13	4.3	12	3.9	54	17.4	310	100
Children	30	9.7	102	32.9	110	35.5	25	8.1	7	2.7	36	11.6	310	100

This table shows that 35.5% of the respondents thought that food and drinks advertisements were not useful for the health of children and 8.1% harmful. It is clear from table

6-2 that there is a great need to provide a solid empirical foundation for the development of an enlightened social policy regarding children's health and TV advertisements. The respondents were asked: 'If the food and drinks TV Ads are not useful or harmful what is the best way to avoid their negative effects?' The answers are represented in the table below:

Table 6-3 Distribution of respondents according to their opinion to avoid negative effects of TV Ads.

The best way to avoid negative effects of TV Ads.	Fr.	%
Be subjected to control and exclude harmful advertisements especially to children.	164	52.9
Seek medical consultation and approval of advertisements.	152	49.0
TV Specialist Committee is formed to judge prior to its presentation.	111	35.8
Show time should be controlled so that children will not see them.	86	27.7

Table 6-3 shows that: 52.9% thought that TV Ads should be subjected to control and that to exclude harmful advertisements, especially for children, was the best way to avoid their negative effects, 49%. The second way was to seek medical consultation and approval for advertisements. A specialist TV committee should be formed to judge advertisements prior to transmission, as third most popular choice, 35.8%. Controlling viewing time so that children will not see advertisements was thought to be the least effective way to avoid negative effects of food and drinks TV advertisements, being favoured by 27.7% of the respondents. Also, they were asked: 'If you think food and drinks TV advertisements are very useful or fairly useful, state the useful aspects?' The answers are listed in the next table:

Table 6-4 Distribution of respondents according to their opinion about the useful aspects of TV Ads.

If you think TV Ads are useful or fairly useful, state the useful aspects.	Fr.	%
Help to identify some good food products.	135	43.4
Help to identify benefits of some types of food.	118	38.1
They are enjoyable and exiting to children.	105	33.9
Help to identify companies producing new foods.	64	20.6

The main use of food and drinks TV Ads was to help to identify some good food products, from the point of view of 43.5% of the respondents. Second use was in helping to identify the benefits of some types of foods by 38.1%. The people who thought TV Ads are useful as they are enjoyable and exciting to children represented 33.9%. TV Ads helping to identify companies which are producing new foods was thought to be the least useful aspect from the respondents' point of view 20.6%. Since mass-media in general, and TV in particular have become an integral part of the Saudi social culture, very serious attention should be given to ways in which TV programmes in general could improve health education. The respondents were asked: 'What attracts your attention most in TV advertisements?' The next table exposed respondents' answers.

Table 6-5 Distribution of respondents according to their opinion about TV Ads.

What attract your attention most in TV advertisements?	Fr.	%
Way of presentation, excitement and photographing.	195	62.9
Focusing on the positive aspects of food products only.	129	41.6
Movements and gestures of commercial presenters.	70	22.6
Attention to outer appearance such as clothes, make up and hair style of the person who presenting commercial.	64	20.6
Beauty of face and body.	51	16.5

Table 6-5 reveals that the main attraction for respondents was the way of presentation, excitement and photography as reported by 62.9%. Second was focusing on the positive aspects of food products, mentioned by 41.6%. Movements and gestures of commercial presenters was third choice 22.6%. Fourth choice was attention to outer appearance such as clothes, make up and the hairstyle of the person who is presenting the commercial, as represented by 20.6%. What least attracted the respondents' attention to TV Ads was beauty aspects of face and body as reported by 16.5%. That focusing on the positive aspects of food products as second choice could be regarded as an indication of some positive health awareness among the respondents about food production. Health and dietary awareness should become an integral part and immediate concern of policy for TV programming and advertising. However, evidence from

current research shows that television advertising at present plays a role in the development and maintenance of poor eating habits:

'certainly advertisers being prepared to pour millions of pounds or dollars into short television commercials, believe that this technique does sell products. The audience for such advertisements is extremely large, and several studies in the U.S. have revealed that a substantial number of people derive their nutrition information from seeing and reading ads' (Fieldhouse 1986: 12)

Fieldhouse emphasizes the particular role of mass-media advertising in shaping children's food habits:

'of particular concern is the role of mass media advertising in the formation of children's food habits. Many ads are specially targeted at children and feature confectionery, soft drinks and snack foods. Their intent is to persuade the child to put pressure on the mother to buy brand name products. Young children may not be able to distinguish between adverts and programmes, and certainly do not have the sophistication to descry fact from fiction. Older children can, especially if guided, recognise the essentially unreal nature of adverts' (1986:13-4).

Scientific and specialised books and magazines are considered to be significant sources of knowledge that may lead to cultural and social change as well as raising health awareness in the society. Keane for example, indicated:

'participants obtained information about food and health from a diverse range of sources including the media, friends and relatives, official health education material, supermarket leaflets, books, specialist organizations and health professionals. Information about healthy eating was perceived to be generally around and participants often found it difficult to identify from which source and at what time they had come to know particular examples of information which they quoted as fact. Acquiring knowledge about healthy eating was often described as a process of osmosis which did not require much attention' (1997:180).

A study conducted by Al-Shiekh in Riyadh (1989), found the following: mass-media such as newspapers, scientific books, television, and radio are considered the most important source of nutrition information. More than half of her sample 213, (50.2%,) obtained their food information from mass-media, especially satellite channels, as shown in the following table:

Table 6-6 Source of Nutrition Information of the Saudi Women.

Source of Nutrition Information.	Fr.
Mother, grandmother.	52
Neighbours.	12
Work.	27
Doctor.	48
Radio.	41
Television.	62
Newspapers.	33
Scientific books.	77
Personal experience.	59
Other sources.	9
Total	424

Al-Shiekh 1989:74.

The following table shows respondents' opinions about the most important sources of health and dietary information.

Table (6-7): Distribution of respondents according to their opinion about the most important sources of obtaining health and dietary information.

Rank	Radio		Saudi TV		Satellite Channels		Newspaper and Magazines		Medical Books		Doctors		Relatives and Friends		Medical Booklets and Pamphlets		Cookery Books		Personal Experience	
	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%
1	24	7.7	60	19.4	45	14.5	34	11.0	36	11.6	53	17.1	40	12.9	18	5.8	23	7.4	56	18.1
2	25	8.1	44	14.2	19	6.1	36	11.6	23	7.4	30	9.7	37	11.9	27	8.7	14	4.5	25	8.1
3	13	4.2	24	7.7	20	6.5	42	13.5	17	5.5	32	10.3	32	10.3	33	10.6	10	3.2	41	13.2
4	25	8.1	31	10.0	18	5.8	37	11.9	19	6.1	21	6.8	32	10.3	26	8.4	14	4.5	29	9.4
5	19	6.1	16	5.2	12	3.9	21	6.8	20	6.5	33	10.6	34	11.0	30	9.7	18	5.8	26	8.4
6	20	6.5	17	5.5	29	9.4	21	6.8	16	5.2	20	6.5	21	6.8	29	9.4	16	5.2	22	7.1
7	21	6.8	16	5.2	8	2.6	23	7.4	27	8.7	17	5.5	14	4.5	22	7.1	26	8.4	17	5.5
8	16	5.2	20	6.5	12	3.9	14	4.5	29	9.4	18	5.8	25	8.1	15	4.8	25	8.1	15	4.8
9	30	9.7	20	6.5	14	4.5	7	2.3	14	4.5	9	2.9	8	2.6	21	6.8	29	9.4	19	6.1
10	31	10.0	8	2.6	29	9.4	10	3.2	12	3.9	3	1.0	15	4.8	9	2.9	35	11.3	8	2.6

In this study, Saudi TV was regarded as the most important first and second source of obtaining health and dietary information, 33.6%, while newspapers and magazines came third, 13.5%, and fourth, 11.9%. Relatives and friends were fifth choice, 11%. Satellite channels, medical booklets and pamphlets came equal sixth selection, 9.4%, while medical books were seventh and eighth sources from the respondents' point of view, 8.7% and 9.4%. Radio ninth, while Cookery books were tenth choice. The least important source of health and dietary information was personal experience. It is clear from table 6-7 that TV is the most important and effective source for people to obtain health and dietary information. This finding is similar to Al-Shiekh's finding (1989) mentioned before in this Chapter. It is also, similar to Elfituri and MacDonald's study (1999) in Libya where they found TV is the most effective health knowledge medium for raising health awareness. (1999:268). Nowadays, worldwide TV is the paramount means of communication, as this study has demonstrated very clearly, because reading in general is becoming less important. It is therefore, necessary to re-evaluate health promotion programmes that depend mainly on written material, especially in developing countries where illiteracy is high. It is clear that exposure to mass-media can help facilitate and improve health and dietary awareness by giving individuals access to new ideas. As we have seen however, TV advertisements of food and drinks have some negative effects on the family in general and children in particular. Therefore, TV should take the initiative to combat any negative influence of food and drink advertisements instead increasing and enhancing health and dietary awareness programmes that might lead to an improvement of societal health conditions. In this context, the role of Saudi TV in this matter will be dealt with in some detail. Besides that, the respondents' opinions and attitudes will be used to formulate an accurate assessment and evaluation of Saudi TV's contribution to raising public health and dietary knowledge.

Role of Television, Satellite Channels and Radio in relation to health practice:

Television, satellite channels and radio are very important educational media in disseminating health and dietary consciousness to people by introducing many features of diet,

health and diseases in suitable programmes to people in society. These programmes may have a positive effect and give people the opportunity to seek help from experts without entering into the personal relationships implied in visiting doctors. However, well planned culture-specific entertainment programmes can, in fact, become effective vehicles for delivering diet and health, educational messages in a real situation context. Well-targeted diet and health programmes can play a very important role by taking both the lead and maintaining momentum in health education efforts. Also, they could help in promoting health and nutritional awareness among vast audiences in transmitting health messages previously paid for by various governments in the region.

In Gulf countries televised nutrition and health education programmes are limited. Musaiger emphasises this point:

'televised nutrition education is limited and usually includes health education programmes. The Secretariat of Health for the Arab Gulf countries has established a health education programme for all the Arab Gulf countries which is called "Salametic" (Your Safety), and consists of 52 series of 25 minutes each for television, and a message of 2-3 minutes daily on the radio. The programme concentrates on actual problems relevant to the Gulf community and is produced in a high quality technique. Nutrition was among the subjects which was given priority in this programme, but a few nutritional problems were included, such as obesity, anaemia and dental caries. An effort to initiate a joint nutrition education programme for the Gulf is highly recommended, considering that these countries have a similar health and nutrition situation' (1987:165).

Saudi Television has two channels collaborating to show many specific health programmes including the following: Health programmes on Channel One are:

Your Safety:

A guidance programme giving health advice in a simple and dramatic way. It has only a limited time, between 10-15 minutes.

Medical Panel Discussion:

Various health matters are discussed by many doctors and health specialists. It is a weekly programme of 40 minutes' duration.

Health Week:

This is an occasional programme to make people aware of the dangers of smoking, drugs and alcohol on the health of individuals and society.

Scientific Research:

This gives a brief review of various medical research. It lasts between 25-30 minutes.

Your Health and Diet:

This programme shows the advantages of healthy food which the body needs. It is weekly, for 40 minutes. Moreover, the channel presents 15 slots to make people aware of common health topics.

Health programmes on Channel Two are:

First-aid saves lives:

A guidance programme about how to perform first-aid for eyes, spinal column, or bites and stings etc. It has only a limited time, between 10-15 minutes.

Breakthrough:

A guidance programme giving health advice about bone fractures caused by accidents and how to perform first-aid to save an individual's life. It has a limited time, 15-20 minutes.

Innovation:

This is a scientific programme giving ideas and analysis about new medical scientific matters and medical innovations like, laser, rays, drugs etc, and how they are used. This programme has different times according to the subject matter.

Medical Drugs:

This provides health knowledge about medical drugs or herbal medicine, how they are made and how to use them in different health fields.

The Encyclopaedia of Science Films:

This is a scientific programme providing analysis and ideas about diseases such as heart diseases, liver, stomach, inherited and epidemic diseases and other diseases caused by insects, animals and bacteria. It is limited in time between 30-40 minutes weekly.

Medical File and Health Matter:

It is a guidance programme giving health advice. Every episode is about a health topic such as: Women's health problems, the dangers of fever and the importance of medical diagnoses for people who are suffering from heart diseases or other diseases, and children's diseases. It is also about the use of medicine and medical drugs. This programme has different times according to the subject matter.

Get to know your body:

This provides health knowledge and gives the audience an idea about the human body. Each series presents part of the human body such as: Liver, Pancreas, Heart etc. and the function of that part and the diseases which could affect it. The programme lasts for 30 minutes.

Medical Journal:

This programme interviews many doctors and specialists to discuss some common and contagious diseases and how to take prevention and necessary treatment. This programme is organised weekly for 40 minutes.

Test Show:

It consists of questions and answers about body diseases and everything connected with health aspects. It has a limited time between 25-30 minutes.

Aids, Drugs and Alcohol:

Some programmes are transmitted periodically during the year on many occasions to make people aware of these social and health hazards on the individual and society. They are limited in time to between 15-20 minutes.

History of Medicine:

A guidance programme provides information about the common diseases in Saudi society such as: diabetes, kidney failure, rheumatism, hypertension, anaemia, respiratory system diseases and other diseases. The length of this programme is about 20-30 minutes.

Health For All:

Medical health guidance and awareness about chronic and common diseases and the ways to prevent them. It has a short time between 10-15 minutes.

Unfortunately, these programmes are in English and many Saudi people do not understand English and never switch the television on this channel.

The Saudi Radio is guided and administered by the Ministry of Information whose task is to reach as wide an audience as possible in the Kingdom.

Note of the day:

This is one of the most important radio programmes. It is a short daily broadcast with a wide range of goals including the following:

- To guide and advise people about their health as, for instance, in a campaign against cholera.
- To urge people to come forward to have immunization against cerebral-spinal fever.
- To make pilgrims aware of contagious diseases, sunstroke and high temperature.
- To protect children's health and provide information on maternity, child care and healthy food.

There are also, many other health programmes which are transmitted at various times during the week to promote better health among citizens such as Health Education, Safety and Point of view. The following table illustrates the extent to which such programmes were viewed or listened to by the survey respondents.

Table 6-8 Distribution of respondents' watching and listening to health and nutritional programmes.

How often do you watch TV health and nutritional programmes?	Fr.	%
Always	39	12.6
Sometimes	169	54.5
Rarely	50	16.1
Never	24	7.7
No Reply	28	9
Total	310	100

The survey results summarized in table 6-8 show that the majority of respondents, 54.5%, sometimes watched and listened to health and nutritional programmes, while only 12.6% did so regularly, and 23.8% either rarely or never watched. It is a good sign that the majority of respondents tend to watch and listen to these programmes sometimes, especially, if they follow and apply the medical advice in their daily life, as the next table will indicate. Also, we do not expect that people can always tended to watch such TV programmes due to the fact that they are carrying out their normal activities outside homes.

Table 6-9 Distribution of respondents by following and applying health advice in their daily life.

Do you follow the medical advice and apply them in your daily life?	Fr.	%
Always	54	17.4
Sometimes	158	51.0
Rarely	27	8.7
Never	9	2.9
No Reply	62	20.0
Total	310	100

Table 6-9 shows that: 17.4% of the respondents always followed medical advice, while the majority of the survey sample, 51%, used to follow and apply it sometimes. A few 11.6%, either rarely or never followed or applied the advice. A negative response of this kind from the public will certainly hinder the promotion of health awareness among the public.

Table 6-10 Respondents' evaluation of the benefits of health and nutritional programmes on TV for their families' health.

How do you evaluate health and nutritional programmes on TV?	Fr.	%
Very useful	104	33.5
Fairly useful	133	42.9
Not useful	10	3.2
Do not know	61	19.7
No Reply	2	.6
Total	310	100

Table 6-10 reveals that the majority of respondents, 76.4%, found medical and nutrition programmes either very useful or fairly useful for their families' health and only 3.2% found them not useful. It appears that mass communication agencies are becoming more directly involved in all social affairs. T.V. in particular is taking the lead over all mass-media, where it is penetrating most Saudi houses, specifically urban areas. Khoja *et al's* study showed that 'around 94% of their study sample have radio and television' (1996:2). Therefore, one anticipates that it could play a significant role in broadening people's health and nutritional knowledge. And this fact is confirmed by Al-Sheikh's study (1989) mentioned before. Also, statement 31 (Appendix A) where 75.8% of the study sample agreed that mass-media help improving health and nutritional awareness of the family members.

Table 6-11 Distribution of respondents by listening to health and nutrition programmes on the Radio.

Do you listen to the medical and nutritional programmes on the Radio?	Fr.	%
Always	19	6.1
Sometimes	112	36.1
Rarely	91	29.4
Never	87	28.1
No Reply	1	.3
Total	310	100

The survey results summarised in table 6-11 show that the largest group, 36.1% of the respondents, listened to medical and nutritional programmes on the Radio sometimes, and the next group, 29.4%, listened rarely. 28.1% never did so. It is clear from this table that the majority of respondents, 57.5%, either rarely or never listened to these programmes, which could be regarded as an indication of negative health and nutritional awareness of respondents about the benefits of these programmes.

Looking at tables 6-8 and 6-11, it is clear that TV health and nutrition programmes are more attractive for the respondents than those on the radio.

Table 6-12 Distribution of respondents by following and applying nutritional and health advice in their daily life.

Do you follow the medical advice and apply them in your daily life?	Fr.	%
Always	34	11.0
Sometimes	83	26.8
Rarely	22	7.1
Never	4	1.3
No Reply	167	53.8
Total	310	100

Table 6-12 reveals that 11% of the respondents always followed nutrition and health advice from radio programmes, while 26.8% used to follow and apply them sometimes. 8.4% either rarely or never did so. Consequently a negative response of this kind from the public will certainly slow the promotion of health and dietary awareness.

Table 6-13 Respondents' evaluation of the benefits of health and nutritional programmes presented by Saudi radio.

How do you evaluate health programmes presented by Saudi Radio?	Fr.	%
Very useful	82	26.5
Fairly useful	95	30.6
Not useful	5	1.6
Do not know	125	40.3
No Reply	3	1.0
Total	310	100

Table 6-13 shows that the majority of respondents, 57.1%, found health and nutritional programmes on the radio either very useful or fairly useful for their families' health, while very few 1.6%, found them not useful.

Looking at tables 6-10 and 6-13, it is clear that TV health and nutritional programmes are regarded as more useful than those on Radio for respondents' families' health. Also, it is clear from these two tables that there is a need to improve TV and radio health and nutritional programmes to be more useful for family health. Therefore, they should be presented in a very attractive and enjoyable manner. TV and radio can often help by giving prominence to particular

health messages. Well targeted health and nutritional programmes can play a very important role by both taking the lead and maintaining the momentum of health education efforts. In response to statement 32 (Appendix A), 84.9% of the respondents agreed that health and nutritional programmes on Saudi Radio and TV need improvement while 3.3% were satisfied with these programmes. Therefore, mass-media can play a very important role in promoting health and dietary knowledge in any society. A study conducted by the researcher (1989), in Riyadh, about Health Awareness and Health Care in the Saudi Family showed that:

'67.3% of the sample agreed strongly that the mass-media play an important role in promoting health awareness in the family and 30.7% agreed, to some extent and only 2% of the sample disagreed'. Also this study affirmed that the majority of the respondents, 80% used to watch and listen to the medical programmes on Television and Radio' (Al-Abdullatief 1989 : 61-2).

It is a good sign that the majority of people tend to watch and listen to health and nutritional programmes, especially if they follow and apply the medical advice in their daily life. The present study found that 28% of the sample regularly followed this advice, while 64%, did so sometimes. Only a few of respondents, 6.7% never did so. Also, this study indicated that the majority of respondents, 67.3% found medical programmes very useful for their families' health and 26.6% found them useful. Therefore, television and radio are more important means of promoting health and dietary knowledge in a society having a high percentage of illiteracy, while books and pamphlets are less effective as a result of illiteracy and the fact that most health books are written either in foreign languages or in a complicated manner making it difficult for poorly educated people to read and understand them.

Role of Books and Written Material:

Health books, newspapers, medical journals, booklets, health and nutritional magazines, bulletins and posters contribute with other means to build up diet and health knowledge and play a very important role in raising the level of health and nutritional standard. They could reach large numbers of people with whom there is no contact, especially patients who are in need of information and are unable to obtain it, and to supplement information given by doctors and nurses which may be forgotten. Ley emphasised this point 'in a medical outpatients department

39% of patients could not remember what they had been told between 10 and 80 minutes of seeing the Consultant' (Cited in Gunn 1986: 23). The written word may have a great effect on the readers in a society that has a large number of educated people, when the message is understandable, specific, acceptable and carefully chosen. Also, newspapers and magazines are read by thousands of people daily because they have the advantage that the reader has the information on printed pages. Richardson (1969) affirmed this point as follows: 'a weekly dental column in a newspaper had a much greater effect than a weekly radio broadcast. Medical journalists are usually responsible and well informed aiming to present information in an attractive and memorable form' (cited in Gunn 1986 :54). The following tables provide insight into the value of written sources of information for Saudi respondents.

Table 6-14 Distribution of respondents by reading newspaper and magazines.

How often do you read newspaper and magazines ?	Fr.	%
Always	122	39.4
Sometimes	113	36.5
Rarely	34	11.0
Never	39	12.6
No Reply	2	.6
Total	310	100

Table 6-14 shows that: the majority of respondents 75.9% used to read newspaper and magazines either always or sometimes, while 23.6% either rarely or never did so. These figures could be regarded as a positive response from the respondents. The respondents were asked to evaluate medical and nutritional articles in newspapers and magazines. Their evaluations are represented in the next table.

Table 6-15 Respondents' evaluation of the benefits of medical and nutritional articles in news paper and magazines.

How do you evaluate medical and nutritional articles in newspapers and magazines?	Fr.	%
Very useful	71	22.9
Fairly useful	157	50.6
Not useful	12	3.9
Do not know	8	2.6
No Reply	62	20.0
Total	310	100

Table 6-15 reveals that 73.5% of the respondents thought that medical and nutrition articles are very useful or fairly useful, while only 3.9% thought these articles are not useful. It may be expected that those who read medical articles would be more likely to have favourable attitudes towards medical and nutrition articles, which make them more adaptable to change and new ideas. Furthermore, the researcher found that 73.5% of the respondents had positive opinions and attitudes towards the usefulness of these articles, which in the long run will certainly be very beneficial in promoting public health and dietary awareness in the society. This finding is similar to Al-Abdullatief's finding (1989) 'where 37.3% of the sample always read medical and nutrition articles in newspapers while 41.4% did so sometimes and 20% never read the articles, and 73.3% of the respondents had positive opinions about the usefulness of medical and nutrition articles' (1989 : 64)

Table 6-16 Distribution of respondents by reading general health and nutritional books.

How often do you read general medical and nutritional books ?	Fr.	%
Always	14	4.5
Sometimes	133	42.9
Rarely	70	22.6
Never	93	30.0
Total	310	100

Table 6-16 indicates that: only 4.5% of the respondents read general medical and nutrition books always while 52.6% either rarely or never did so. People tend to rely upon TV

more than reading in obtaining or acquiring their health and nutritional information. Reading habits in general, and health and nutritional books in particular, seem to be in declining. This kind of negative response from the public will certainly adversely affect promotion of health, dietary knowledge and awareness.

Table 6-17 Distribution of respondents by following and applying diet and health information in their daily life.

Do you follow and apply diet and health information in your daily life?	Fr.	%
Always	36	11.6
Sometimes	110	35.5
Rarely	10	3.2
Never	7	2.3
No Reply	147	47.4
Total	310	100

Table 6-17 shows that 47.1% of the respondents always or sometimes followed and applied diet and health information in their daily life, while 5.5% either rarely or never did so, and 47.4% of the survey sample did not reply as they never read such books. This suggests that for many people, written media would not be effective in the promotion of health and dietary awareness.

Table 6-18 Distribution of respondents according to buying simple diet and health books for their children.

How often do you buy simple diet and health books for your children?	Fr.	%
Always	18	5.8
Sometimes	51	16.5
Rarely	53	17.1
Never	182	58.7
No Reply	6	1.9
Total	310	100

Table 6-18 reveals that the majority of respondents 58.7% never bought simple health books for their children, and 17.1% rarely did so. Only a few 5.8%, bought them regularly or sometimes, 16.5%. This small percentage could be explained by the fact that there is a very acute shortage of

children's books, especially on diet, health and hygiene, written in a simple language which children can understand. Children's libraries are very poor. For example, in Al-Obekan Books Store, the largest in Riyadh, children's books accounted for only 1.5% of total sales. Moreover, only 10% of children's books were written by Saudi authors, and 90% of them were either written by Arab authors or translated from foreign languages as mentioned by Muhammed Al-Obekan, the manager of Al-Obekan Book Store in (Al-Yammah, no. 1602, 10/4/2000:45).

Table 6-19 Relationship between respondents' level of income and buying simple health, dietary and hygiene books for their children.

Level of Income		Do you buy simple health, dietary and hygiene books for your children?				
		Always	Sometimes	Rarely	Never	Total
Low	Fr.	1	3	6	69	79
	%	1.3	3.8	7.6	87.3	100
Medium	Fr.	3	9	15	51	78
	%	3.9	11.5	19.2	65.4	100
High	Fr.	14	39	32	59	144
	%	9.7	27.1	22.2	41.0	100
Total		18	51	53	179	301
Chi-Square = 50.463		D.F =6		P = 0.000		

Many Saudi people do not see the relevance of buying books, especially in health and nutrition matters. For instance, the study respondents picked up education as fourth choice in their priority in family spending money as shown in table 5-11. Also, this table shows that the highest percentage in each category never bought these books. It is well known that Saudi people express interest in acquiring the latest technology for utilization in their daily life such as TV satellite channels, video, computer and electronic games etc. When it comes to the role of income in buying books, table 6-19 tests the relationship between level of income and purchase of simple health, diet and hygiene books for children. A significant difference exists between level of income groups. The higher the level of income the more likely to buy these books. 36.8% of high income group bought these books either always or sometime, and 41% never did so. While 5.1% of low income tended to buy these books either always or sometimes, the

majority 87.3% never bought these books, which may have an adverse effect on their children's general knowledge.

It is obvious that publications, especially newspapers, books and magazines, have good potential in provoking discussion on health topics. But these methods of education are not suitable in a society which is characterised by a high percentage of illiteracy and less educated people. This point was made by Musaiger as follows:

'Posters, booklets and leaflets are widely used as a tool for nutrition education in the Gulf Region. However, we do not know whether this method of education is a suitable one in this community which is characterised by a high percentage of illiteracy. In a pilot study by Musaiger (1985) visitors to the health centers in Bahrain were asked whether or not they read the health and nutritional educational booklets published by the Ministry of Health. It was found that two thirds of the visitors said they did not read these materials. It was wondered if the one third who read the booklets had benefited from them. Giving nutritional information does not guarantee that the dietary habits of the people will change. Unfortunately, there is no evaluation about the effectiveness of the printed materials on the knowledge, attitudes and practices of the people in the Gulf' (1987:165).

In Saudi Arabia most medical books and magazines come from abroad. Very few are printed and distributed locally, however, examples of those are included: Saudi Medical Magazine, published by the Ministry of Health, and the King Faisal Specialist Hospital –Medical Journal. Also, the Medical colleges are contributing in promoting a better health situation by their own medical magazines. In addition, most Saudi daily newspapers have articles about health topics. Unfortunately, many people who are in urgent need of health and diet knowledge are illiterate and cannot read printed materials. It is clear that exposure to mass-media tends to facilitate and improve health and dietary knowledge and make individuals more adaptable to new ideas and change. Also, exposure to messages would be positively related to innovativeness, health and dietary knowledge and other consequential variables. These findings could be used to answer the study question: "What is the role played by mass-media in increasing Saudi family awareness of unhealthy dietary habits"? Mass-media have become an international and global phenomenon shaping people's thinking and behaviour in general, and food choice and dietary habits in particular. Therefore, mass-media could play a positive role to make people aware of the importance of a prudent diet, healthy food and hygienic aspects of food production.

Role of Authorities and Health Workers as a source of knowledge:

In spite of the efforts of governmental agencies to create a suitable health milieu in the city of Riyadh, public health knowledge is very low in old parts of the city such as Al-Oud, Al-Shemasi and Manfuha. This alarming fact raises questions about the adequacy of these efforts. In the researcher's view, public and dietary health awareness is a very serious matter and if its performance is poor, this problem ought to be reviewed and readdressed in a wider perspective. For example, the main function of hospitals and health centres is to provide curative health services and little is being done for the prevention of malnutrition disease. Little attention is paid to the provision of preventive services. Sebai in his study in Turaba indicated the following point:

'it is quite apparent that the work being done by the health centre is simply curative, or even palliative treatment and there is no tangible program contributing to the prevention of diseases or the promotion of health. The main function seems to be to answer the simple demands of the people rather than meeting their actual health and nutrition needs' (1981a:125)

One of the main obligations of doctors and health teams is to play an important role as educators and health promoters as they are part of the health sector they should meet the demands of people and their real health and nutrition needs. Health care is wider in application than hospital treatment. Medicine must have both curative and preventive goals. However, in Saudi Arabia in the matters of preventive health and nutritional care, activities are carried out insufficiently. For example, health visitors never go into people's houses to follow up mother and child care after birth or to give diet and health advice. This kind of situation certainly would create negative effects on patients, on one hand, and on health personnel, on other hand, by stopping them from seeing the real health and hygienic conditions of their patients. Banoub affirmed this point 'Home visits, in general, are reported to be prohibited by internal rules of the Ministry of Health. Thus the main methods of extending health care and follow-up visits for the chronically ill is obviously lacking' (Cited in Sebai 1982:66). As discussed in the earlier study by the researcher (Al-Abdullatief. 1989) 94% of sample of people interviewed they reported that they had never been visited by a health visitor or any health assistant, in spite of the usefulness and beneficial effects of these visits.' (:75).

This acute situation could be attributed to many factors as noticed. For instance, social and religious customs are in place to protect female doctors as well as female patients in their houses from any harassment and danger. Also, the shortages of physicians in hospitals and health centres make it rather difficult for a physician to leave his or her patients to make home visits. An economic and moral explanation was given by Sebai 'the authorities do not expect the doctor to pay home visits fearing that he may obtain money from patients, thereby he is deprived of real contact with life' (1981a:127). Moreover, hospitals and health centres rarely send health and nutrition booklets to people in their surrounding area, as shown in the following table:

Table 6-20 Distribution of respondents by sending health and nutrition booklets and pamphlets to their houses.

Have you received any health and nutrition booklets or pamphlets from health centre in the last five years?	Fr.	%
Yes	71	22.9
No	236	76.1
No reply	3	1.0
Total	310	100

Table 6-20 shows that by 1998 when this research has been carried out little had changed. only 22.9% of the respondents reported that the health centre sent them health and nutrition booklets and pamphlets, while more than two thirds 76.1%, did not receive any booklets or pamphlets. Health and nutrition pamphlets and booklets may enlighten people. Public health and dietary awareness cannot be improved only by distributing them among the people, but activities should be expanded to include carrying out extensive medical research in old parts of cities and rural areas to find out the real health and nutrition problems, and providing suitable solutions for them to make people aware of health and nutrition matters. People in old quarters need preventive medicine as well as curative medicine. They are both very important in improving health conditions. Many health problems in Saudi society are related to diet and

inadequate sanitation. For example, a child raised in a community with poor sanitary conditions accepts these conditions as a way of life and continues to follow health patterns moulded by his environment and fellow citizens. Changing child's attitudes, health and dietary habits becomes more difficult each year that he/she continues to live in these surroundings. Health workers should help people in these areas by providing them with simple and clear health and dietary information they can understand according to their age, sex, level of education and the area in which they live. There is a lack of health education about health matters such as: child care, family nutrition, healthy food, personal hygiene, home hygiene, preparation of fresh food, insect control and prevention of communicable diseases. Many mothers badly need advice about pregnancy, expectant mother's diet, exercise and other health matters. The following tables highlight this point:

Table 6-21 Distribution of respondents according to their opinion about the role of health authorities in making people aware of health and dietary habits.

How adequate is the role of health authorities in making people aware of their health and dietary habits?	Fr.	%
Very adequate	16	5.2
Adequate	18	5.8
Inadequate	165	53.2
Do not know	72	23.2
No reply	39	12.6
Total	310	100

It can be assumed that those who are in charge of public health in planning and implementing health policies should be expert in their field in order to deliver their services professionally. But, this is not the case in the view of the study sample, where 11% thought that the role of health authority in bringing about public awareness of their health and dietary habits was adequate, while more than half of the respondents 53.2% were of the opinion that it was inadequate. Respondents' complaints of the inadequacy of the health authority's role in making people aware of health and dietary habits were expressed more specifically in these features.

Table 6-22 Distribution of respondents according to their opinion about features of inadequacy role of health authorities.

Features of Inadequacy	Fr.	%
Ministry of Information officials give little attention to make people aware of health and nutritional problems in the society and diseases resulting from malnutrition.	115	37.1
Health Authorities are not keen in making people aware of their health problems and what are the method of prevention or sharing in finding solutions.	109	35.2
Little attention is given to preventive medicine. While concentrating on therapeutic medicine.	108	34.8
All these features mentioned above.	85	27.4

The study respondents' opinions and evaluation of the performance of the social agencies mentioned above, in helping to spread healthier attitudes and practices in the society, might prove to be of immediate concern to be put in mind in order to facilitate their role in improving social healthy attitudes and practices. Select social agencies important in facilitating progress are Ministry of Information, Health Authority and Health policies. The Ministry of Information is the most influential social agency in developing countries in general and in Saudi Arabia in particular. In spite of its great importance and its expected role to play in the society, its role in delivering and help promoting health and dietary knowledge is inadequate according to the study respondents' opinion 37.1%. In this situation, there seems to be a gap between its expected role to play and what it is delivering in reality. This paradoxical situation ought to be readdressed and improved especially in the domain of health and dietary awareness. Health authorities and health policies appear to be handicapped in delivering their health and dietary messages in the study respondents' views. 35.2, 34.8%. In this context, these two social agencies must re-examine their performance in delivering their proper health and nutritional messages. It is clear from table 6-22 that: there is an urgent need to make people aware of health and nutritional problems in the society and encourage them to share in finding solutions for these problems. Therefore, health authorities and the Ministry of Information should work

hard to improve preventive medicine, as people need preventive medicine as well as curative medicine. 96.4% of the study sample agreed with statement 40 that health and nutritional enlightenment must take priority in health programmes. Also, 83.6% of the respondents agreed with statement (39 Appendix A) that public health and nutritional enlightenment efforts being made by official agencies are insufficient. Only 5.8% of the survey sample disagreed. The respondents were asked: "If the role of health authorities in making people aware of their health and dietary habits is adequate, what are their promoting health programmes?' Their answers are given in the next table.

Table 6-23 Distribution of respondents according to their opinion about health and dietary programmes promotion.

Types of health and dietary programmes promotion.	Fr.	%
More attention for health and dietary awareness by information authorities through increasing the number of health programmes in Radio, TV and medical articles in newspaper and magazines.	24	7.7
Increasing the attention of hospitals and health centres to health nutritional awareness of patients.	19	6.1
Sending medical and nutritional booklets and pamphlets to the people and encourage them to follow the health advice.	18	5.8
Giving lectures and hold symposia on health and dietary awareness and encourage people to participate in solving health and nutritional problems in their society.	14	4.5

The survey results summarized in table 6-23 show that: only 7.7% of the respondents thought that more attention is given for health and dietary awareness by information authorities through increasing the number of health programmes on radio and TV and medical articles in newspaper and magazines as first main feature of promotional health programmes. Second choice was increasing attention by hospitals and health centres to health and nutritional awareness of patients, as mentioned by 6.1% of the respondents. Third selection was sending medical and nutritional booklets and pamphlets while encouraging people to follow their advice, as reported by 5.8% of the survey sample. Giving lectures and holding symposia on health and dietary awareness and encouraging people to participate in solving health and nutritional

problems in their society came fourth choice from respondents' point of view 4.5%. Looking at tables 6-22 and 6-23, it is quite evident that health authority's role in broadening public health and dietary knowledge is still far from be sufficient and falls short of realizing its planned goals and aims.

Eating out:

Another health authority's responsibility is not only enlightening people about healthy diet and knowledge, but also supervising restaurants and grocery shops. Then the need to go a step forward to present a practical example of improvement in health in relation to food can be seen in respondents' opinions about restaurants. As noted, the number of fast food restaurants in Riyadh is on the increase as shown in table 4-16. Moreover, 'the population of Riyadh usually spend more than 3,000,000 SR. monthly on fast food meals. The amount of money spent on fast food increases 10% yearly' (Asharq Al-Awsat. No. 7889, 4/7/2000:12). Meanwhile, a study carried out in Riyadh showed that 54% of the sample mentioned that the absence of variety in the Saudi meal is the reason that encourages people to go to restaurants. 58% said that Saudi men, especially young men, eat in restaurants more than at home. 41% held the opinion that women being involved in work outside is the primary cause that leads men to have their meals outside. The results of this study also reveal that 88.9% of men were of the opinion that food prepared at home is cleaner than that of restaurant. 66% held the opinion that restaurant's food is expensive. (in Al-Riyadh, No. 11101, 15/11/1998:16). As Lupton mentioned 'a healthy diet is not simply about avoiding animal fat, salt or sugar in foods, as advocated by nutritional science, but is also, implicated in which food is produced, the care with which food is prepared, the extent of processing it receives and the consciousness of such aspects of the food on the part of the consumer' (1996:82). In some of fast food restaurants hygiene, in relation to cleaning and preparation methods and quality of food, is not properly observed (see Appendix D 2,3,4,5,6,7,8,9, 10,11,12, 13; and 17). In addition to that, such food may not have good nutritional value. The main purpose of these restaurants is to satisfy customers at a profit, regardless of the

food value of the items they sell. These restaurants should be responsive positively to any public health menace regardless of the costs. At least, they should be reacting in a similar way to that of some of the international restaurants in a very specific situation as Marsden *et al.*, have pointed out that 'McDonald's, Burger King, Wimpy and Wendy's in 1996 abandoned British beef due to the break-out of bovine spongiform encephalopathy (BSE), and resulting customer lack of confidence in British beef. They decided to resort to source beef outside the U.K. until confidence in British beef is fully restored' (Marsden *et al.*, 2000: 191). When one looks at the Saudi situation, it appears that some fast food restaurants are not keen to take notice of public health and people reaction. The study respondents' opinion is illustrated in the following table.

Table 6-24 Distribution of respondents according to their comments and observations about unhealthy conditions of some fast food restaurants.

Comments and Observations.	Fr.	%
Yes	213	68.7
No	70	22.6
No Reply	26	8.7
Total	310	100

Table 6-24 projects the study respondents' opinions and remarks about some fast food restaurants health conditions. Two-thirds of them have something to say about restaurant health conditions, mostly objections and complaints. This state of uneasiness and suspicion of a large segment of the society in this kind of situation must not pass unnoticed as is evident in the following six complaints. The table below shows the type of these comments and observations in detail.

Table 6-25 Distribution of respondents according to their comments and observations about unhealthy conditions of some fast food restaurants.

Enumerate the comments and observations according to their importance.			
Rank	Comments	Fr.	%
1	Not sufficient clean.	169	54.5
2	Low nutritional value of served foods.	120	38.7
3	Health conditions are not met in restaurants in terms of ventilation and narrow eating places.	107	34.5
4	Some served foods do not meet family members wishes.	104	33.5
5	Eating places do not meet Saudi family traditions.	87	28.1
6	Some served foods are stale.	69	22.3

The survey results summarized in table 6-25 show that the most frequent comment was that restaurants were not sufficiently clean, 54.5%. Second, low nutritional value of foods served, 38.7%, third that health conditions are not met in terms of ventilation and space, 34.5%. Table space, especially in the international food chain restaurants, for example, McDonald's and Burger King, is very limited as it is standardized internationally, Saudi families are usually large however, so they are uncomfortable in some of these restaurants. Fourth most important comment was that some foods served do not meet family members' desires, 33.5%, because Saudis are accustomed to having a large amount of food in their meals. Also, some new foods are not favored by Saudi people. Fifth, that seating arrangements do not meet Saudi religious and traditional values, 28.1%, because they require sex segregation and total privacy for each family. The least important comments and observations were that some foods served are stale, 22.3%. Some fast food restaurants buy expired food stuff because it is cheap, regardless of customers' health. However, these may affect peoples' health and expose them to the danger of food poisoning through contamination caused by bacteria introduced during preparation, storage or preservation.

Table 6-26 Respondents level of education and their opinion about unhealthy conditions of some fast food restaurants.

Level of Education		Do you have specific comments about health and nutritions of some fast food restaurants ?		
		Yes	No	Total
Low	Fr. %	59 70.2	25 29.8	84 100
Medium	Fr. %	58 79.5	15 20.5	73 100
High	Fr. %	96 75.6	31 24.4	127 100
Total		213	71	284
Chi-Square = 1.811		D.F = 2	P = 0.4043	

Table 6-26 tests the relationship between level of education and specific comments about unhealthy conditions of some fast food restaurants. There is no significant difference

between education levels and concern about unhealthy conditions. Perhaps this is because the situation of some fast food restaurants is so unhealthy that everyone whether educated or illiterate can easily see or perhaps people just do not care that much, or perhaps making a complaint is a rather complex and lengthy process. People tend to eat in restaurants and other eating facilities in spite of their awareness of health and hazards in some of these restaurants. The explanation of this contradictory behaviour could be as follows: Firstly: People tend to consider going to restaurants as an appropriate method of recreation. Secondly: It has become a new trend and fashion to eat in restaurants. Thirdly: People tend to consider restaurants as places for meeting their special close friends where they feel quite comfortable chatting and gossiping. Fourthly: some people's affluence contributes to their going to restaurants quite frequently, and fifthly: the wide spread growth of restaurants in the whole country in general and in big cities in particular. Besides these restaurants' advertisements and commercials attract people to have some meals outside home.

Many food poisoning cases¹ have occurred. Annual health reports indicated that 'in 1994 the number of food poisoning only in the (MOH) emergencies was 4,348 cases, but the number increased in 1996 to 8,162 cases' (1994: 66-1996:68). Also, many food poisoning cases occurred during the summer season in 1997 affecting a large number of people, and some of them died. They showed food poisoning symptoms 2-48 hours after their meal, like acute pain in intestines, nausea, loose motions, languor and fatigue, with high body temperature. Also, during two months from 15/06/1997 to 15/08/1997, a food poisoning epidemic occurred in Riyadh where 32 persons were affected because of eating *Shawurma* sandwiches (Al-Riyadh, No. 10603, 5/7/1997). Another food poisoning incident happened because of eating *Shawurma* from Al-Khaima restaurant in Al-Oud Quarter, South of Riyadh, 14 cases were reported in (Al-Jazeera daily newspaper, No.9047, 6/7/1997). In a third incident, 142 food poisoning cases were reported due to having *Shawurma* and hamburger at Al-Muntada restaurant, in Khanshalilah Quarter, South

1- Complete Family Health Encyclopedia defined food poisoning as the following 'A term used for any illness of sudden onset, usually with stomach pain, vomiting, and diarrhoea, suspected of being caused by eating contaminated food' (1990:456)

East of Riyadh (Al-Riyadh, No.10615, 17/7/1997). A fourth food contamination case occurred due to eating *Shawurma* at Al-Nujum restaurant, in the South of Riyadh where 125 persons were affected. (Al-Riyadh, No. 10620, 22/7/1997). Three persons were affected with food poisoning resulting from eating *Kabsa* purchased from one of the restaurants operating in South of Riyadh (Al-Jazeera, No. 9066, 25/7/1997). Another food poisoning case was reported due to having *Shawurma* at a restaurant in Al-Naseem quarter in the East of Riyadh , at which 14 persons were affected. (Al-Riyadh, No.11328, 30/06/1999: 40). Moreover, 30 food poisoning cases occurred on 27/12/2000 due to having *Shawurma* at a restaurant in Al-Malaz quarter in the middle of Riyadh (Al-Riyadh No. 11881. 3/1/2001:2). In addition to that, 102 food poisoning cases occurred on 16/5/2002 due to having *shawurma* at Al-Kare restaurant (Al-Azzezeh quarter south of Riyadh) because of contamination and bad food storage. (Al-Jazeera No. 10824. 18/5/2002:4). These cases are not rare and Al-Othaimen, the Saudi nutritionist is of the opinion that poisoning cases in Saudi Arabia are on the increase. Food contamination can be attributed to air pollution, unhygienic methods of preparing , cooking and storage of food. In addition to that, lack of strict food rules and regulations, poor supervision of restaurants and food processes might be considered responsible for the increase of food poisoning cases in the society. To put this in perspective, Al-Watan daily news paper reported that ' in Saudi Arabia there are more than 4,000 violated bakery, sweets factories and food shops. Furthermore, there are more than 2,000 violated foreign employees while 30% of restaurants do not have enough preventive insecticide and 68% of restaurants had health and food rules violation' (Al-Watan No 596. 18/5/2002:12). Besides these high profile cases, there were a number of other food poisoning cases which have not been widely reported in newspapers and one has to bear in mind that the above cases are not the only ones and that there could be many similar cases in other parts of the country. For example, 184 food poisoning cases were traced to meals at Al-Adul restaurant in Makkah. (Al-Eqtisadiyah newspaper. No. 1628, 16/2/1998:21). Also, there were 36 food poisoning cases occurred in two different restaurants in Baish city (South west of Saudi

Arabia) as a result of having *Shawurma* and *Kabsa* as reported in (Al-Riyadh, No.12012, 14/5/2001:2) Moreover, Al-Hjaji, the general director of preventive health in the Ministry of Health and the WHO consultant in S.A. had estimated the incidents of food poisoning cases in Saudi Arabia at 3,000 cases yearly. In (Okaz, No.12721. 25/6/2001:44) The following table shows respondents' awareness of this problem.

Table 6-27 Distribution of respondents' opinion about if there is an increase of food poisoning cases.

Is there an increase of food poisoning cases?	Fr.	%
Yes	216	69.7
No	4	1.3
Do not know	87	28.1
No reply	3	.9
Total	310	100

Table 6-27 reveals that the majority of respondents, 69.7%, reported that food poisoning cases are on the increase, especially during summer where heat is high and temperature can reach to 47° C in July and August. Only very few 1.3%, mentioned that food poisoning cases are not on the increase, while 28.1% did not know. These findings could be seen as a sign of people's awareness of their social health conditions and that might be an alarming warning to be taken in consideration in future going-out to restaurants. Such cases have happened because these restaurants were not taking proper hygiene precautions and did not follow health requirements and regulations. Moreover, 99% of their employees are not qualified to work, and may not pay proper attention to hygienic rules and food value when their main purpose is to earn money only. The causes of food poisoning as perceived by respondents are shown in detail in table 6-28.

Table 6-28 Distribution of respondents' opinion about causes of food poisoning.

Number	Causes of food poisoning.	Fr.	%
1	Lack of proper health conditions in food storage.	193	62.3
2	Lack of cleanliness in restaurants employees.	164	52.9
3	Lack of cleanliness in preparing and cooking food.	157	50.6
4	Poor or lack of control and supervision on restaurants and groceries by health authorities.	139	44.8
5	Lack of awareness among restaurants employees of the importance of healthy methods and hygienic conditions of food preparation and serving.	120	38.7
6	Usage of expired foods.	115	37.1

The survey results summarized in table 6-28 show that lack of proper health conditions in food storage is considered as the first cause of food poisoning, in the opinion of the majority of respondents, 62.3%. Second was lack of cleanliness among restaurant employees as mentioned by 52.9%. Lack of cleanliness in preparing and cooking food was the third cause as reported by 50.6%. The fourth cause of food poisoning was poor or lack of control and supervision on restaurants and groceries by health authorities as stated by 44.8%. Lack of awareness among restaurant employees about the importance of hygienic food preparation and serving was the fifth cause in the respondents' opinion, 38.7%. Usage of expired food was perceived by respondents as the least cause of food poisoning, 37.1%. These findings could be regarded as an indication of the urgent need to improve control and supervision of restaurants and grocery shops. Also, new health awareness programmes for restaurants' and groceries' employees, in particular and for public health in general, should be introduced on a wider scale to improve health conditions in society. Besides, the above causes according to the study respondents' opinion, there are others for instance, food specially Shawurma are exposed to bacteria called Salmonella, when they are not properly preserved, kept out of refrigerators and chillers for long time and exposed to high temperature. Also, bacteria are introduced when foods are displayed outside the cafe, where they are subject to contamination due to flies, insects, smoke emission

from automobiles and dusty winds. Moreover, inadequate storage conditions make health safety precarious. Al-Qahtani (1998) stressed this point. As he put it:

'the wholesale stores have tremendous amounts of foodstuffs that are stored under inadequate storage conditions. The reasons are either attributed to the design and construction of the warehouses whether they are normal or refrigerated or freezers; or to transportation by trucks with poor refrigeration systems or insufficient capacity that depends on the running of the truck engine. This can be traced back to many reasons that include: failure to choose the right system, or failure to observe the climatic conditions of the Kingdom. However, the most important reason is the non-availability of contractors and good management that are capable of applying the design specifications and good storage and training of the staff. This is required for the good maintenance of the display area. In addition, quality of the products must be regarded as a priority. People must be educated not to excessively purchase canned or dried dietary products and then store them under improper storing conditions. This kind of exposure may cause the food items to expire before their scheduled expiry date shown on the label thereon. The climatic conditions, especially during summer season must be taken into account. High temperature causes the food items to expire unless they are stored in good storing conditions' (Al-Qahtani, *World of Diet*: 20).

In addition to this, some fast food restaurants do not follow proper hygienic ways of preparing and cooking food. Some restaurant employees do not always keep their hands clean. Another cause of food poisoning is restaurants usage of items whose expiry date is about to end, because such items are comparatively cheaper for them and they can earn high profits by selling them. Furthermore, poor supervision of these restaurants might lead to mistakes being overlooked while illegal workers employed under the sponsorship of a Saudi citizen often do not apply safety rules and regulations. The number of restaurant workers in Riyadh in 1994 was 34,916, of whom 3,918 were Saudi and 30,998 Non-Saudi. The total number of restaurant workers in Saudi Arabia in 1994 was 119,804 of whom number of Saudis was 16197 (13.5%) and 103,607 (86.5%) were non-Saudi (Ministry of Planning 1994: 6). According to Al-Qurashi there are numerous foreign workers who sell and display foodstuff such as samboosa in open air, on pavements and streets in front of the restaurants, thus making the food exposed to contamination with dust and smoke of cars. In one restaurant, dishes, spoons and forks were quickly flushed into the sink without being completely washed and without using hot water or disinfectant or detergents. He believes that food poisoning cases are on the increase because of poor supervision by respective authorities. Another factor is that the owners of these restaurants ignore hygienic instructions and conditions pertaining to the preparation and cooking of food. Lack of cooperation of many citizens

not informing relevant authorities about food rules violation whether in restaurants or in grocery shops is a contributory factor as well. Consequently non-compliance with hygiene standards leads to many dangerous contagious diseases. (AlRiyadh No. 11158, 11/1/1999: 10). Al-Owaymir states that

'the number of restaurants in Riyadh is on the increase. But this increase in number is not associated with an increase in the number of health inspectors in municipalities and provinces. Consequently, there are many restaurants which utilize unhealthy meat due to the fact that they slaughter sick or weak animals that are bought at cheap prices in order to gain a lot of profit. Moreover, some old buildings are used as sites for the manufacture of some food stuffs and do not conform to hygienic regulations regarding the preparation, cooking and storage of food' (In Al-Riyadh, No. 11094, 8/11/1998: 31).

The health and nutritional situation could be hazardous as a result of certain unlawful practices and procedures. This is evident in real life as Al-Romi pointed out in Al-Riydh daily newspaper that 'some butchers in Dawadmi Town (320 Km south west of Riyadh) slaughtered nearly dead and very sick sheep and camels in old, obsolete and unsupervised places to sell them to their customers. When they were arrested, their punishment or penalty was only to pay some money. (Al-Riyadh No. 12293. 19/2/2002:23). Moreover, Bakhsh and Al-Salih stated that they conducted a survey of some cafeterias where food was prepared in unhealthy and unhygienic places, for example, in one case a toilet seat is being altered to become part of the kitchen to prepare and cook *foul* (see Appendix D-1). They also, noticed that general standards of cleaning and hygienic conditions were ignored and disregarded with respect to the preparation and cooking of food. Moreover, they observed that cooking pots were left uncovered (See Appendix D-3) and that there were infestations of insects, cockroaches in particular. In some restaurants, they noticed that cooking areas were very dirty and the workers used to wash utensils in dirty water as they just dipped utensils in water without having them completely washed. Furthermore, they observed that the kammoniah (lamb stomach, onion, salt and spices) was left in an uncovered container and a wooden stirrer fell into the container from above the washing sink. (See Appendix D-2). Then the worker dipped his hand into the container to remove it and threw it in the refuse bin. (Al-Riyadh No. 11140, 24/12/1998: 4).

In another article titled "*Contamination +insects = ready meal*" Bakhash and Al Salih indicated that: they made a round of some restaurant and buffets in Riyadh city. They found that some buffets used to prepare samboosa pastry in a very primitive and unhygienic manner. The workers' hands and clothes were dirty, as was the floor of the kitchen. The refuse bin was full lying beside the workers and left uncovered (See Appendix D-4). Bakhash and Salih also, noted that the workers used to prepare the filling of samboosa (meat, onion, salt, and spices) inside a rooming house where they lived, then bring it to the buffet for preparing samboosa. In the second buffet they visited, they noticed that the worker used to prepare samboosa and soup while the washing sink was full of dirty water and the refuse bins were uncovered. In the middle of the buffet lay the *foul* jar and another container full of dirty dishes. At a third restaurant, they found that chairs outside the restaurant were used as holders for samboosa pastry ready to be sold, without being covered with a plastic cover. When they were asked why samboosa pastry was put on chairs uncovered, the workers answered that the purpose was to make it dry (See Appendix D-5) Inside the kitchen, they noticed that some workers used to rub their faces and dry up sweat with the same towel, which they used to expel the air from samboosa pastry. They also, used the same towel for drying dishes and other different utensils. Moreover, the workers did not use gloves to avoid pastry being contaminated by their sweaty and dirty hands (See Appendix D-4). The fourth case was a buffet for the sale of *foul* in Muraba quarter in Riyadh. The owner used toilet space to extend the kitchen, with only minor alterations. (See Appendix D-6). Bakhash and Al-Salih concluded that most cafeterias that they visited were externally clean and the workers stationed at the reception areas looked very clean. However, inside the kitchen, hygiene regulations regarding the preparation and cooking of food were ignored. (in Al-Riyadh, No. 11152: 5/1/1999: 10).

Following food poisoning cases, Riyadh Municipality conducted a number of inspection visits between 1997 and 1999 to restaurants and grocery shops and decided to close and impose fines on (2263) of them. And (19477) were warned not to repeat health and food rules

violations. (Al-Riyadh No. 10639. 10/8/1997:12 and Riyadh Municipality 1999:1). Moreover, during six months in the beginning of 1999 in Jeddah, (2,224) grocery shops were closed due to non-compliance with health and hygiene regulations and bylaws. 5,516 grocery shops were warned not to repeat health and food violations, and 75,000 tons of inedible food stuff were withdrawn from grocery shops. (Al-Riyadh No. 11510, 29/12/1999:28). Despite these actions by the Municipality, poisoning cases are still occurring on an alarming scale. Al-Hameed said that 'there are only seven inspectors or supervisors who are supposed to supervise 4,000 restaurants and grocery shops in Riyadh, that is to say, 571 restaurants and grocery shops per inspector monthly and 19 daily. Thus, there is an acute need for more inspectors' (in Al-Riyadh, 25/12/1998:2) The number of health inspectors was increased in 1999 to 110. (Riyadh Municipality 1999: 1). The following table shows the opinion of the study sample about control and supervision of restaurants and grocery shops by health inspectors.

Table 6-29 Distribution of respondents according to their opinion about the control and supervision of restaurants and grocery shops by health authorities.

Respondents opinion about the control and supervision.	Restaurants		Groceries	
	Fr.	%	Fr.	%
Sufficient control.	17	5.5	24	7.7
Fairly sufficient control.	55	17.7	59	19.0
Insufficient control.	120	38.7	91	29.4
No control.	33	10.6	48	15.5
Do not know.	82	26.5	87	28.1
No reply.	3	1.0	1	.3
Total	310	100	310	100

Table 6.29 tells us about a critical health situation, which appeared to be annoying the study sample and caused them to be alarmed. But in reality one has to look at the whole situation, where supervisory teams are out numbered by restaurants and grocery shops beyond their physical abilities to cope with as it has been explained earlier. About half of the study respondents showed their dissatisfaction about health team supervision on restaurants and grocery shops 49.3%, and 44.9% respectively. While around one fourth of the respondents

admitted their satisfaction 23.2% and 26.7% . In this case supervision certainly is inadequate and half of the survey sample can not be wrong in their deduction and evaluation. Exposing authority's role in supervising implementing and advocating health knowledge in society, this process could not be achieved fully without full participation of school as an important social institution. Therefore, school and its vital role in bringing about and promoting societal health knowledge will be treated briefly.

Role of schools:

Health education could not be materialized fully in one generation nor via one single social institution in the society. But from a logical point of view, it is imperative to lay down lasting foundations of health education through school which could be seen as an effective institution to introduce and promote health education in the society at large. Moreover, one has to bear in mind, that health education becomes not only a local and national issue in a very limited small scale , but also, it should be of global nature. This line of thinking is to some how similar to what WHO is strongly advocating more precisely as follows: ' WHO's Global School Health Initiative, launched in 1995, seeks to mobilize and strengthen health promotion and education activities at the local, national, regional and global levels. The initiative is designed to improve the health of students, school personnel, families and other members of the community through schools' (Brundtland 2000:2) . From the general view as far as health education is concerned it is of valuable insight to resort to an applicable and practical situation in Saudi educational institutions, such as primary, junior, high school and medical schools which could be used as places or means to introduce health and dietary knowledge as part of national policies to create a better milieu to publicise health education. The Ministry of Education in Saudi Arabia appears to have been interested in health and health knowledge of its students, in elementary, secondary and high schools for several years. Formal health education was offered in these schools, but on a very limited and inadequate scale. as long ago as Owens 1962 pointed out the following:

'formal health instruction was not offered in the Eastern province of Saudi Arabia until 1959. The only reference to health education in the Ministry of Education book was the science book which consists of only five pages of personal hygiene, anatomy and physiology. But nowadays there are three text books which are being used for health instruction in the fifth and sixth grades. One was prepared to be taught in the Egyptian school system and the other two were written by an Egyptian author for the Saudi Arabian schools. All three texts are devoted primarily to science instruction. Two of them have less than fifty pages. The weakness of the Egyptian text lies in the fact that it was written for use in Egypt and the health content does not serve the needs of the Saudi students. At present, the schools do not have an adequate health text' (1962:50-1).

Inadequacy of formal health education does not appear only in the Ministry of Education curriculum, but also, it still persists even in medical schools in Saudi Arabia. This inadequacy after 40 years does manifest in many problems, as it has been suggested by Al-Gindan *et al.*, 2000 'overcrowding of the curriculum, over presentation of some subjects, presence of relatively non-relevant subjects, dissociation between basic and clinical sciences, repetition of lectures and exams, need for new subjects for clinical relevance, hospital based medical education with minimal community based clinical practice, as well as non-optimal use of resources' (2000:324-25). They suggested for reform of the current curriculum to meet today's problems and future demands.

In Riyadh, and in all Saudi provinces, the curriculum is the same in all governmental schools under responsibility and control of the Ministry of Education. The Ministry of Education is responsible for boys' education throughout the country. One can say that all Saudi governmental primary, junior and high schools do not have an adequate health and nutritional text book. Girls' education, which comes under the responsibility and control of General Administration for Girls' Education, is in no better position than boys' health education. The following tables reflect respondents' views on this point.

Table 6-30 Distribution of respondents answers of does the education system play an important role in increasing health and nutritional awareness of students?

In your opinion, do education system play important role in increasing health and nutritional awareness of students?	Fr.	%
Yes	108	34.8
No	111	35.8
Do not know	87	28.1
No reply	4	1.3
Total	310	100

Table 6-30 shows that: 34.8% of the respondents thought that the education system plays an important role in increasing health and nutritional awareness of students at all levels. While 35.8% thought that it did not do so. This finding could be regarded as an indication of the urgent

need to improve the education system. Dietary information in educational curricula and school activities and dietetics must be included in school educational programmes to meet the requirements of students at different stages. If this happens they will be equipped with the necessary information and knowledge from reliable scientific sources. This input will in turn add to the promotion of dietary awareness for male and female students and potentially protect them against misconceptions and superstitions. This can be achieved by educating students how to make an intellectual assessment of each meal and each item of food that he/she may consume. The meal can be judged by several important variables such as its dietary value and to what extent the body has sufficient components from different dietary items. This process of evaluation and prudent judgement must continue with the individual throughout his/her entire life. Students must be encouraged to exchange dietary information with members of their families. Discussions of this type may address different types of food available in the market and the consumption of good foods. In addition to that, it makes family members aware of good dietary habits. Also, education authorities should pay more attention and concern to health and nutritional awareness of students at all levels. Formal education can be of great importance in introducing and institutionalising basic health knowledge and dietary awareness in society in general and to students in particular. Schools can play a very important role in dissemination of health information, and they may be one of the places for initiating community involvement. Different aspects of health care and good health practices should be included, as appropriate, as part of the lessons for various subjects taught at school. This should apply at all levels of formal education. Teachers need to be trained accordingly. Schools should provide a practical example of a healthy lifestyle, so that students not only learn about healthy living, but practice it at school. Also, school activities involving parents, such as parent-teachers' meetings or school celebrations, can be used as an occasion for transmitting health information.

Table 6-31 Distribution of respondents according to their opinion about the role of schools in promoting health and dietary awareness of students.

How adequate is the role of schools in promoting health and dietary awareness of students?	Fr.	%
Very adequate	22	7.1
Adequate	67	21.6
Inadequate	176	56.8
Do not know	44	14.2
No reply	1	.3
Total	310	100

Table 6-31 reveals that the majority of respondent, 56.8%, thought that the role of schools in promoting health and dietary awareness of students is inadequate, while 21.6% , thought that it is adequate and few 7.1%, considered it very adequate. This finding is similar to the finding of King Saud University students' study (1993) mentioned in Chapter Two. General dissatisfaction with the current role of schools in promoting health and dietary awareness of students could be regarded as an alarming sign of future health problems. Therefore, schools should play an important role in promoting health and dietary awareness of students at all levels. These institutions could be used as places to introduce health knowledge as part of national policies to create a better milieu and publicise health awareness. It seems that there is a need to improve health knowledge and nutritional awareness in schools and educational institutions because school curricula are not paying attention to health and nutritional matters. And since, the last 17 years, Musaiger pointed out:

'there is no specific programme for nutrition in the schools in the Gulf countries. Nutrition is included in the curriculum at all levels (primary, intermediate; and secondary) in the programmes of science, home economics, public health and agriculture. Health institutes and colleges are providing nutrition programmes, but to a limited extent, mainly for nursing, food science and home economic students' (1985:10)

The respondents supported Musaiger's conclusion as can be seen in the following table.

Table 6-32 Distribution of respondents according to their opinion about features of inadequacy of schools' role in promoting health and dietary awareness of students.

	Fr.	%
No time is allocated for health education which should be included in the educational subjects.	178	57.4
Lack of attention to educate students on adapting sound nutritional habits and to keep the environment clean.	175	56.5
Health inspectors are not invited to schools to give lecture and make students aware of health and nutritional problems in the society and encourage them to share in solving these problems.	174	56.1
The scholastic day does not include educational activities on health nutrition.	171	55.2
Students are not encourage to participate in health activities.	170	54.8

The inadequacy of the educational system in Saudi society as a developing country to deliver and promote sound health and dietary awareness in society in general and among students in particular is quite noticeable. The study respondents confirm this fact, through five different features. First no time is allocated for health education in educational subjects 57.4% might be responsible for the low level of health and dietary awareness. The generation growing up with this low level of health knowledge might lead to a dangerous health situation and condition in the society. Second, lack of attention to educate students to adapt sound nutritional habits and keep the environment clean 56.5%. Teaching students a subject can not be retained unless it has been put in practice in their daily life. The popular Maxim says, " If I heard, I forget, but If I do I know" confirms the credibility of this feature. Third, health inspectors are not invited to schools to give lectures and make students aware of health and nutritional problems in the society and encourage them to share in solving these problems 56.1%. Health inspectors are supposed to be the most knowledgeable persons in health and dietary matters. Therefore, they should be invited quite regularly to social institutions in order to deliver health messages and advice. Being aware of health matters and problems is not enough to solve them, but participating in the endeavour of planning, executing and solving health and nutritional problems appear to be a most practical means to bring about a healthier standard in the society. Meanwhile, it could be contemplated that health is not only what the government can deliver to people by laws and

regulations, but also what people do for themselves. Fourth, the scholastic day does not include educational activities on health nutrition 55.2%. This matter does seem to be of little concern for the educational authority. In addition to that, very little attention has been paid to health and nutritional matters. Unfortunately this situation is not confined to the school, but is also found in the society at large. Fifth, students are not encouraged to participate in health activities 54.8%. This kind of situation may result in students being ignorant in health and dietary matters. One can think of school as a social institution, which has an immense impact, and it represents an evolutionary and developmental stage. But, in the same thinking, the university could be seen as another stage of development worth exposing in Saudi Society. Therefore, a brief investigation of medical education in Saudi Arabia will enable us to visualize its potential impact on the health conditions in the country.

Medical education in Saudi Arabia ¹began with establishment of the first medical college at King Saud University in 1969, with cooperation of the University of London, in Britain, which had a considerable influence on the curriculum, its content and approach to learning. It was copied from the Western curriculum. The second medical college, at King Faisal university in Dammam (in the east of the country) was established in 1975 with the assistance of Harvard University. In the same year, 1975, the third medical college was established in King Abdulaziz University in Jeddah (in the west of the country). In 1980 the fourth medical college was established in Abha (in the south west of Saudi Arabia) as a branch of King Saud University. The Western model of education was adopted throughout Saudi medical colleges, while Saudi social and cultural features were not considered. As a result, there is a gap between educational programmes and the real needs of the people. It can be said that until recently, medical education was unrelated to health needs of the country. Al-Sebai, one of the early medical academicians, who was dean of three different medical colleges in Saudi Arabia, emphasised this alarming situation as follows:

¹-It has to be noticed that some of these two pages' historical background materials are based on Al-Abdullatief (1989 :81-82)

'the western model of medical education has been widely copied and adopted throughout the world and the Middle East is no exception. As a consequence, a gap has been developed between the training provided for physicians and the real health needs of the countries. In many places medical education may be prescribed as irrelevant and isolated and as a consequence there is a risk that it could become discredited' (1985: 223).

As a result, there are many health and nutrition problems because medical colleges followed Western curricula established to satisfy and solve western health and medical needs in accordance with their culture and society. Also, one has to bear in mind, that people in these countries may be aware of their health needs and problems. But in Saudi Arabia, like other developing countries, the illiteracy rate is high, as mentioned before, and people need preventive medicine as well as curative medicine. That is why these curricula are inappropriate to health needs of the country. They do not prepare medical students adequately to meet the real health needs of the family and community. There is a need for socio-cultural approach to ensure that the curricula can adapt to the socio-cultural environment of Saudi people. Further confirmation of this was reached by Wong in his study (1981).

'the analysis of data and descriptive evidence showed that the experts believed that the current programme does not promote research activities relevant to Saudi Arabia and that the programme is not oriented towards the health needs of the rural areas. The experts felt very strongly that the curriculum should be better designed to promote community orientation. Major findings of the students opinion survey indicated that. They considered themselves competent in individual patient care but not so in dealing with the socio-cultural and environmental factors that impinge on community health. A significant number of students felt that there was an urgent need to modify and increase the existing clinical and practical training and the physical facilities' (1981:30)

Sebai stressed this point in the following lines:

'medical education in Saudi Arabia, as in the case of most of the third world countries, is dominated and influenced by Western formal health education and this kind of situation is apparently due to the absence of formal health education in these countries. This dependency will continue until the emergence of native health institutions and personnel who can provide genuine solutions to their own particular health problems. Medical education in Saudi Arabia, as in any other country must be related to the real needs and demands of the citizens. This need entails changes in the curriculum and methods of learning in the medical colleges. The four medical colleges in Saudi Arabia should connect their curriculum to the real health needs of the country. They should exchange ideas and gain from other countries' experiences rather than copying the others' curriculum. Methods and procedures used in health education in colleges and schools should be geared to the culture and environment of the society in which they are applied because the health problems are largely determined by socio-economic and environmental factors rather than other factors' (1985:125)

Health education should aim to promote health and prevent disease, know about the proper health habits and follow principles of healthful living. According to WHO 'health education goals should be an integral component of the overall development goals. It should aim at realistic

improvement in the basic quality of life' (1983:21) cited in Al-Abdullatief (1989 : 83) Moreover, Al-Mulhim *et al.*, (1999) mentioned that:

'there is a real need for personnel in the field of Allied Health Professions in the Kingdom of Saudi Arabia. Like any other geographic location, has its own pattern of diseases. It is therefore mandatory that the Curriculum for the Allied Health profession should be designed specifically to meet the real health and nutrition needs of the Saudi community. In this regard, efforts have been exerted already over several decades, and, the curriculum from different Colleges have been referred through the Ministries of Health and Higher Education. The results have met with varying degrees of success. These efforts have provided a substantial framework upon which the curriculum content can be revised to meet the health and nutrition needs of country. This will involve change' (1999:126).

Also Qutub indicated that ' in Saudi Arabia critical care medicine is minimally taught under other subject headings in surgery, internal medicine or anesthesia. So there is a need for inclusion of critical care medicine in the undergraduate curriculum for better integration of basic and clinical sciences on one hand and improvement of the student's base of knowledge and quality of patient care on the other' (2000:327-29) Eagerness of the Saudi medical circle to change and improve their medical curriculum to meet the nutritional and health problems of the Saudi society becomes conspicuous and loud for the last fifteen years. And this had been stressed by Al-Abdullatief (1989)

'there is a craving for change and innovation to meet the real health and nutritional problems that people face. This change comes from the ministry of health and medical colleges in the country. These medical colleges started with traditional education programmes. They are making progress to connect their curriculum to the health needs of the country. The four medical colleges are engaged in the long-running process of assessment and evaluation of their curriculum. Doubtless, the main thrust of these processes is to develop a systematic programme and curriculum which enhances the inter-relationship between academic circles and Saudi environment. Medical colleges have a leading role in introducing and promoting health education in the country.' (: 84-5)

The need for changing and improving medical curriculum is a strong demand and necessity as this study's respondents affirm as well as the actual situation's needs. Besides this, health institutes are supposed to contribute to the diffusion of health education in medical circles, as well as among the public at large.

The Saudi health educational system in primary, junior high, high schools and university should include more health and nutrition subjects in their curriculum in order to make students aware of their health and diet. More than two-thirds of respondents, 82.9%, agreed that educational

curricula at various levels suffer from insufficiency of health and nutritional matters for both male and female students. It should seek more relevant health and nutrition needs of people.

Nowadays, nutrition has become an international issue, with the recognition that poor diet could be responsible for many health problems world wide. Saudi Arabia is not an exception and its health problems appear to be acute ones. Therefore, the education curriculum ought to consider nutrition as a basic subject, and it should become part of the educational curriculum. Respondents who thought the role of school in promoting health and dietary awareness for students is adequate were asked 'what are the most important educational and practical activities? Enumerate the following according to their importance:

Table 6-33 Distribution of respondents according to their opinion about the important positive educational and practical activities.

	Fr.	%
Giving lecturers and holding symposia on health and nutritional awareness.	32	10.3
Distributing of health booklets and pamphlets to students.	30	9.7
Inviting health inspectors to visit schools to enlighten students about sound health behaviour.	29	9.4
Carrying out practical health activities to train students to participate in health and nutritional awareness programmes.	23	7.4

Table 6-33 demonstrates that: 10.3% of the respondents thought that giving lectures and holding symposia on health and nutritional awareness was the most important educational and practical activity. While 9.7% thought that distributing health booklets and pamphlets to students was second. Furthermore, inviting health inspectors to visit schools to enlighten students about sound health behaviour was third preference 9.4%. Carrying out practical health activities to train students to participate in health and nutritional awareness programmes was the least important educational and practical activities, as reported by 7.4% of the respondents. In spite of low the profile of the education system in contributing public health and dietary awareness, it could be improved by emphasising nutrition and dietary awareness in future educational and health policies. These findings could be used to answer the study question: 'What is the role played by health education in increasing health and nutritional awareness in Saudi society?'

Table 6-34 Respondents' attitudes towards the most important and effective means of improving diet and health awareness in the society.

	Fr.	%
Paying more attention to health and dietary awareness in educational systems as consistent with students abilities at various levels.	298	96.1
The schools should play a positive role in directing and monitoring students and guiding them to sound health behaviour in school, family and surrounding environment.	293	94.5
Increasing health and dietary awareness programmes in radio and TV	284	91.6
Giving lectures and holding symposia on health and nutritional problems in the society and inviting parents to attend these activities.	279	90.0
Hospitals and health centers should pay more attention to preventive medicine and make people aware of health and nutritional problems.	258	83.2
Distributing health booklets and pamphlets to increase health and nutritional awareness in the society.	256	82.6
Propagate sound health behaviour through religious lectures and symposia in mosques.	255	82.3
Sending health visitors to families to offer them health advice.	245	79.0
Hold educational health nutritional and environmental courses as consistent with the requirements and problems of the Saudi family.	236	76.1

Health and dietary awareness promotion in the society becomes a multi-faceted processes through various means. It is rather difficult to list these because of its complexity and multitude. Table 6.34 tries to seek the study sample's opinion and views of how to increase and improve health and dietary awareness. That could be done through nine different ways as the respondents pointed out according to their importance. The most important and conspicuous means are educational curriculum 96.1%, schools 94.5% , mass-media 91.6%, holding symposia and giving lectures 90%. These means seem to be greatly felt by large segments of the society rather than the other five means which their effects are limited to specific segments of the society. People's recognition of how to improve health and nutritional knowledge could be seen as a step forward in the right direction for improvement in the health and nutritional realm.

CONCLUSION:

Many of today's major health problems are a result of lifestyle and individual behaviour. Traditional health education programmes have done little to change adult health and dietary

behaviour. As a result, health educators are therefore, having to develop to help even young children to learn about becoming participating consumers, to control their own health and to improve the quality of their lives. However, it is clear that formal education (schools and universities) are not playing a significant role in broadening people's health and nutritional knowledge, especially in their curriculum. Therefore, health and dietary education programmes should be undertaken on a large scale to improve people's health knowledge in general and nutritional needs in particular while educating Saudi people to make better use of available foodstuffs preventing and treating mild to moderate degrees of malnutrition in children to avoid complications arising from nutritional diseases. Coats and Hards confirm this theme:

'health education, like general education is concerned with change in the knowledge, feelings and behaviour of people. In its most usual form it concentrates on developing such health practices as are believed to bring about the best possible state of well-being. In order to be effective, its planning methods and procedures must taken into consideration both the processes by which people acquire knowledge change their feelings and modify their behaviour and the factors that influence such changes' (1985: 27).

People can be a tremendous resource if they are prepared to take a positive and responsible role in the health system. Without understanding and participation of the public, however, many programmes would fail. Both health's needs and demands should be considered. Health needs are what the experts think are necessary. Health demands are what people think is necessary. In Saudi Arabia, as in other developing countries, the gap between health needs and demand is still wide. Health education and services in Saudi Arabia seems to be similar to what Hornik had in mind in criticizing nutritional education activities performed by health services, as he stated 'Health workers perform their tasks as a routine activity, which is not evaluated, and could be assumed to be ineffective' (Hornik.1985). Moreover, WHO has confirm this point 'there is a pressing need to review and upgrade the status and functions of the health education departments in many countries in the Eastern Mediterranean Region' (WHO 2001:80).

Chapter Seven

CONCLUSION AND SUMMARY OF THE STUDY'S FINDINGS AND RECOMMENDATIONS

This study attempted to investigate whether the affluence which Saudi Arabia has been experiencing since the 1970s has brought about any major changes in the country's traditional dietary habits, and whether the changes, have had any impact on its family health and nutritional status, concurrently witnessing a rise in diet-related diseases. Exploring daily food beliefs and identifying dietary habits and practices of the Saudi family were therefore, major objectives of this study. Focussing on Saudi families in the city of Riyadh, an attempt was made to explore the relationship between dietary habits on the one hand, and a number of variables on the other; the latter included family income, travelling abroad, foreign domestic workers, food fashion, technology, mass-media, education, religion, environment, age, gender and family. Moreover, the roles of various governmental agencies, which are in charge, either directly or indirectly of diet and nutrition matters, were explored.

Field work was conducted to collect primary data. The main findings of this study are summarized in this chapter followed by a series of general recommendations with specific ones for Al-Oud and other old quarters in the city of Riyadh. These findings and recommendations cover different topics such as: food consumption of the study's respondents and changes in their diet, dietary habits and practices. Seventeen key questions constituted the core of this study which explored the role of customs and traditions in shaping Saudi diet and the findings indicated that more than two thirds of the respondents thought that customs and traditions still have a major influence on family's diet. Each region of the Kingdom has its own traditions and particular food and diet with typical styles of preparation and consumption, which affect the diet and dietary habits of its population. Thus, in the context of S.A., food choice and dietary habits are considered as a part of the culture which distinguishes Saudi society from others. The study data revealed that Saudi diet and dietary habits had undergone various changes in the last 20 years, as 96.4%

of the respondents affirmed. These changes could be manifested in many different forms and shapes, which have positive and negative effects on Saudi family's health.

Positive and Negative Factors in the Saudi Diet

Nowadays Saudi food appears to have plentitude of different types and sources all year around instead of the seasonal shortage in the past. However, in spite of the abundance of food two thirds of the respondents still believe that, family's diet in the past was healthier than today. This may be because food in the past, was fresh and free from additives, and artificial fertilizer. In addition people may not have knowledge and awareness of healthy food choices, which may be one factor that attributes to the increase of many diseases. This is quite evident from the respondents' answers of the study question "What might be the effects of changes in diet and dietary habits on Saudi family's health"? More than two thirds 86.2% thought that changes in the Saudi family' diet is one factor which may cause many diseases like diabetes, cardiovascular diseases, obesity among children and adults, tooth decay,high blood cholesterol, disease, gastroenterological disease, hypertension or hypotension, anaemia and malnutrition diseases. There was strong agreement among the respondents that anaemia and malnutrition diseases are prevalent in Saudi society, and more than half of them thought that there is a strong connection between diet and dietary habits changes and many malnutrition diseases in Saudi society. In addition to that, 30.7% of the respondents acknowledged that Saudi family's diet is unbalanced or harmful to health. In this respect to improve this unfavourable health conditions , promoting healthy lifestyles and providing nutritional information to the public are essential alongside encouragement of physical exercise.

Examining closely the Saudi diet, dietary habits and practices, certain facts have emerged. For instance, rice has become the main staple food in Saudi society 82.9%. Bread second, 81.3%, and dates third, 79.4%. Saudi people previously ate lots of dates, either with meals or between meals, with Arabian coffee. Dates thus still appear to be an important food in the Saudi daily diet, not only in the past, but also, at present. The most commonly used meat is

chicken as opposed to red meat, previously the main consumed meat. Nowadays, red meat consumption is becoming less, especially among the younger generation, who are shifting to chicken meat in their daily meals. Only very few respondents mentioned they ate fish. Respondents eat sweet foods like cakes, pies, pudding, cream, caramels and donuts etc. either with meals or between meals. Traditional foods such as *Jareesh*, *Margoug*, *Gursan*, *Henainy*, *Marasea*, *Asidah* and *Makhamer* etc, are less consumed than before.

Tea appears to be the most consumed hot drink followed by Arabian Coffee which was traditionally drunk alone or to accompany dates both in daily life and with guests. The amount of carbonated beverages consumed every day represents a significant change in the Saudi diet. Nowadays, Saudi families are also consuming more starches, fats, and sweet foods than fresh fruits and vegetables. Of particular importance in the findings is that less than half of the respondents' children 48.7% regularly eat fresh fruits and vegetables. Therefore, much effort is needed to increase children's intake of fresh foods for a healthy society. In addition more than half of the respondents were of the opinion that many Saudi families are interested in taking new foods regardless of their nutritional value. Moreover, the majority of respondents are of the opinion that many Saudi families are more concerned with food's shape and taste, rather than its nutritional value. These findings suggest that families are not concerned about rationalizing consumption of food stuff. In this regard, there is an urgent need for health and nutrition awareness programmes to enlighten people to reduce the intake of high fat, sweet and carbohydrate foods and eat a good quantity of fresh vegetables, fruits and other high fiber food stuffs which might help in the prevention of many diseases. As far as the types of food and drinks consumed at parties and ceremonies 86.1% of the study sample indicated that there is an extravagant and excessive consumption of carbohydrates, fatty and sweet food and soft drinks. Therefore, people should be advised and urged not to have excessive intake of sweets, fats and carbohydrates that are deemed to cause diabetes, dental and other health problems. Furthermore, it is important to make them aware of health advantages of eliminating intake of high cholesterol foodstuff and

reduce intake of deep fried food and instead eat boiled and grilled ones. They should be encouraged to eat a good variety of foods, containing reasonable quantities of all different groups of food to maintain a balanced diet.

The study also indicated that eating snacks of poor nutritional value between meals is a common habit among many Saudi people, this may have negative health effects, and should be avoided. This is especially true for children, who often eat while watching T.V. This can take several hours and might lead to over-eating and eventually to children becoming overweight. From a healthy general point of view having three meals regularly every day is a good habit. However, the study found that 14.2% of the respondents thought that breakfast is not necessarily meal. It is proven however, that this meal has a good effect on general health and on the individual's capability for productive and physical activities. From the above findings it appears that changes in Saudi diet may have brought up more negative effects on health than positive ones.

Dietary Practices in Relation to Age, Food Fashion, Income, Technological Devices, Mass-Media and Education:

Dietary habits and practices are shaped and influenced by many variables and as the study's findings demonstrated. For instance, it appears that age plays a crucial role in determining people's food choices and dietary habits. Each stage requires specific diet to meet health and age needs. For example, children need a low fat, sugar, salt and higher-fibre eating pattern. Their meals should be of a very nutritious standard. But in fact the study showed that more than half of the respondents were practicing mixed-feeding. Also, more than two thirds of the study sample's children ate from family's meals. This may be because many mothers lack knowledge about healthy supplementary food for young babies, which could be one of the main causes of children's malnutrition. The health of pre-school children could be dramatically improved if the health service system was built in very close cooperation with people in the community, by making an intensive effort to organize programmes for promoting family dietary awareness. However, such programmes cannot be temporary. They must be recognized as cornerstones of proper health in the Kingdom. There is an urgent need for a programme of health education to

promote nutritional status and to encourage breast feeding and the early introduction of adequate supplementary feeds for children. More than two thirds of the respondents agreed that in spite of the increase in food availability, many family members, especially children, are suffering from diseases of malnutrition. For this reason promotional commercial campaigns for all types of babies' artificial foods and milk formulas should be replaced by educational programmes which stress the benefits of natural breast-feeding, and should be encouraged soon after delivery. Staff involved in health care facilities , such as: midwives, medical supervisors and nurses, must shoulder this responsibility, which should be regarded as a national target. For this reason, legislative regulations are recommended to allow breast-feeding mothers to have nursing leave for one year or at least six months. Furthermore, babies' canned food formulas must be discouraged and mothers encouraged to depend upon foods which are available at home to prepare meals that are suitable for babies. This could be encouraged through primary health care centres and mass-media, programmes could emphasize the advantages of breast-feeding and improve people's knowledge of nutrition and nutritional needs. Additional governmental action is necessary, for example, fortification of milk, milk products and cereals with vitamin D and iron could be recommended as an obligatory policy. A national company in the field of food manufacture might be encouraged to manufacture a local baby formula whose ingredients are based on locally available products such as milk and dates, which could be supplemented by adding some vitamins and mineral salts. This process might ensure that babies receive a good diet which is consistent with the local environment of Saudi society.

One of the questions in this study was 'who carries out the task of preparing meals and cooking foods in the family?' The study findings showed that more than half of the respondents reported that the mother is the one who prepares and cooks the family's meals, followed by mother with housemaid's help. There seems to be some negative attitudes towards foreign house workers, and it is believed they may have negative health and cultural effects on children. Moreover, there was strong agreement among the respondents about the health and hygienic risks

which could be caused by foreign workers living with the family without genuine health check-ups to be sure that they are free from diseases. In this regard efforts should be made by the Ministry of Interior and other related agencies, to reduce the huge influx of foreign house workers coming to the country. There is a need to make people aware that housemaids should only perform domestic household activities and they should not handle children nor prepare children's or family meals.

Adolescence age stage requires its own particular food requirement different from the other age stages. People of this stage should have a balanced diet to meet their health and activities's needs. But unfortunately many Saudi young generation prefer junk food and fast food. As the study findings revealed there is a significant relationship, with younger people tending to go more often to restaurants, than older people. Also, the young generation are more likely to change their diet than the older generation.

With regard to elderly people's diet, few of the study sample thought that it is not necessary to prepare special food for the elderly. This kind of attitude could have many negative health effects, because elderly people do need special care and attention to their diet. Their meals should be balanced with low carbohydrates and fat while rich with proteins, vitamins and minerals. Milk, fruits, vegetables, white meat and cereals are considered to be the basis of elderly people's food. It should be soft in texture so that it can be easily eaten and digested, because their digestive systems are weak and most secretions that facilitate digestion have become attenuated. In addition to that, the loss of their natural teeth may make them unable to chew solid food. Also, their diet must contain essential nutrients, such as proteins to substitute missing cells of tissue and minerals which are of significant importance for strengthening the skeleton and nervous systems. Fresh fruit juice must be part of their diet since they are rich sources of vitamins which is essential in determining the health status of elderly people.

Food fashion also appears to play a significant role in shaping diet and dietary habits in the society. The study asked, 'What effects might food fashions have on Saudi people's food

choice and dietary habits?' In the past, traditional food was dominant. Recently, however, new food fashions have been clearly on the increase. Many Eastern, Western and fast food restaurants are serving different kinds of food and going out to a restaurant for a meal appears to be a new food fashion. More than two thirds of the respondents had some meals in restaurants. The widespread growth of fast food restaurants also contribute to the increased consumption by Saudi families of frozen, canned and fried food. These are served in restaurants and may have negative health effects. With regard to the type of restaurants, the study showed that more than half of the survey sample preferred going to fast food restaurants. However, 68.7% of the respondents expressed specific concerns about the unhealthy conditions of some fast food restaurants. Their comments were related to : lack of cleanliness, low nutritional value of the foods served, poor ventilation, crowding and use of foods past their expiry date. The majority of respondents reported that food poisoning cases are on the increase, especially in the summer may be because the temperatures are very high, in addition to the improper health conditions in food storage, inadequate control and supervision of restaurants by health authorities and lack of awareness among restaurants' employees of food hygiene. Nevertheless, despite this consciousness, 60% of respondents still depend on restaurants and hotels to prepare and serve meals for parties, feasts and festivals. The spread of restaurants (10,275) in the city of Riyadh in 2001, has become a phenomenon which ought to be considered seriously in terms of their potential health impact. Several suggestions have been put forward as follows:

- 1) Restaurant licences should be closely monitored. And restaurants' employees should have valid health certificates and make general check-ups yearly. Also, they should be made aware of the importance of applying all health regulations in preparing and handling foods.
- 2) The number of health inspectors should be increased proportionally to the number of restaurants and food markets and roaming vendors. Some incentives and bonuses should be introduced for the most efficient among them.

- 3) Health inspectors should regularly visit all places which are directly related to public health, like restaurants, kitchens, bakeries, food factories, abattoirs, vegetable and fruits shops etc. In the meantime they should forward their completed reports on their daily inspection visits and submit it to the authorities for necessary action.
- 4) Vigilance and control should be intensified over these restaurants by surprise inspection visits and imposition of strict penalties on those who violate hygiene and health regulations. The present disciplinary procedures are not serving as a deterrent for violators. For instance, closure of a restaurant or food market for a few days or a few months as a penalty for violating health regulations does not serve its purpose. Moreover, restaurants and food markets, which do not abide by health rules, or violate them, should be closed permanently with such closure published in the mass-media. Their violations should never be covered up and overlooked.
- 5) Organise lectures on food industry, for many health inspectors who lack proper orientation and knowledge of progress and developments witnessed in the nutritional field. High qualification of supervisors and employees of restaurants is a step which should be taken to enhance health awareness in the society.
- 6) Giving merit certificates to restaurants and grocery shops that follow health regulations.

Therefore, steps must be taken to ensure " food safety" in practical terms, in matter to storage and transportation. There seems to be an urgent need to establish a food committee under a Consumer Protection Agency to protect people's food and health. Its main responsibilities would be:
 - 1) Safety of food.
 - 2) Planning and making guideline policies for food in the whole Kingdom.
 - 3) Closely monitoring, supervising and inspecting grocery shops, restaurants, firms and others related to food.

4) Publishing information about food, and dietary materials by local, regional and international agencies and to establish a database of information for future use in the realm of food and diet.

In addition to that, efforts should be made to ensure that only healthy food is imported. This can be achieved through the following suggestions:

- 1) Legislative authorities must undertake more close supervision and follow-up on new advances of food additives to ensure that only permitted items are added. They must be sure that such additives do not entail high risk to the consumer's health. Monitoring authorities should disallow all types of food additives that might jeopardize human health.
- 2) Diffusing dietary awareness among members of the community could lead to a higher increase of healthy food choices, regardless of its price and origin.
- 3) Preference must be given to natural foods and locally made products that are more useful and less expensive in price.
- 4) Encouragement of local dietary production projects and dietary industries to focus on the quality issue.
- 5) Diet and health awareness to help develop a national conscience so as to monitor operations of dietary production.

From the previous findings, it could be asserted that there is a significant relationship between food fashions and changes in Saudi diet and dietary habits. Not only food fashion that influences Saudi diet and dietary habits, but also people's income which becomes a catalyst factor that touches most of people's daily life and activities. Moreover, it is important in people's ability to acquire health and nutritional knowledge and better living conditions not only for the individuals but also, for the society at large. The study sought to discover whether family income had any impact on family nutrition and dietary habits. It was found that there is a significant relationship between the level of income and change in food and dietary habits. Also, there is a significant relationship between the level of income and going to restaurants. The higher the level of income the greater the chance of going to restaurants for some meals.

Moreover, the results showed that there is a significant relationship between income and better housing, nutrition and means of acquiring health knowledge such as: health food, magazines, buying simple health, dietary and hygiene books for children, employing foreign workers, and possession of housing. The findings, however, showed no significant relationship between level of income and number of children. The level of income does not determine family size. This is explained by the fact that many Saudi people tend to have a large number of children in spite of their low income. Moreover, more than two thirds of the respondents agreed that high income has a positive effect on having healthy diet.

Since income influences all aspects of life in the society, access to technological appliances has also helped change to take place in Saudi diet. Modern cooking appliances have helped Saudi people to use widely diversified foods and drinks which were not known to the Saudi society before. Moreover, technological devices also help in the widespread use of frozen and canned food which encourages the family to consume them more than natural and fresh food. No canned or processed items of food are free of additives, which can have negative health effects.

Another purpose of the study was to explore the role played by mass-media in increasing Saudi family awareness of healthy dietary habits. The findings showed that two thirds of the respondents agreed that mass-media have helped in improving their health and nutrition awareness. However, more than two thirds of the respondents complained that health and nutritional programmes on Saudi radio and TV are in need of improvements. In addition to that, most of them agreed that food advertisements must be monitored and properly directed in order to bring about good public health. Most of the respondents thought that food advertisements have unhealthy effects on the family's diet, especially that of children and were aimed at financial gain only. The study found that the most important source of obtaining health and dietary information is TV while newspapers appeared as a secondary source. Therefore, mass-media and dietary promotional programmes must be directed towards the achievement of ideal dietary goals via disseminating dietary and health awareness so as to develop positive dietary trends and to control dietary

consumption. This study confirmed that there is a very acute shortage of children's books, especially on diet, health and hygiene, written in a simple language which children can understand. Children's libraries are very poor, and therefore, serious attention is needed to make children's libraries more useful through increasing book stocks and including other materials like videos, posters, booklets etc. to broaden children's health and nutritional knowledge. Improving dietary and health conditions is not only the responsibility of governmental agencies, but also, citizens should cooperate with these agencies and ease their burden to improve health conditions in the society. This participation could help in making more rational plans for the present and future condition of family diet and health. This kind of rational societal participation could not be possible in an illiterate society. Therefore, education can be considered as one of the most crucial social institutions that facilitates and maintains social cohesion. And in this context this study could be seen as of paramount importance in determining and shaping people's diet and dietary habits. It appears that there is a significant relationship between educational achievement and the level of health awareness in the matters of family nutrition, diet of pregnant and breast-feeding mothers, infant feeding, sterilization of feeding bottle, not drinking from the same vessel during meals, buying simple health, nutrition and hygiene books for children, reading books and magazines about health matters, reading the date for the use of canned food, children brushing teeth and changes in dietary habits. Regarding the relationship between the level of education and the number of children in the family, it appears that the higher the level of education the smaller the number of children. With regard to the relationship between level of education and income, the data showed that there is a significant relationship, where the higher the level of education the greater, income increases. Also, there is a strong agreement among the respondents 93% that education has a positive effect on food and nutritional habits.

Health education in the Saudi context does appear-generally speaking to have some inadequacies, just as it does in many developing countries. Features of these inadequacies are that the Ministry of Information gives little attention to making people aware of health and

nutritional problems in the society. Schools and social institutions seem to lack interest in directing and monitoring the health behaviour of students. Health authorities are not keen to make people aware of health problems and they are not offering methods of preventing nor encouraging people to become involved in finding solutions for their health and dietary problems. In addition to that, little attention has been given to preventive medicine which might be less costly than curative medicine to the individual and society. A feature of preventative medicine lies in promoting health knowledge and awareness through all possible means to make people share finding solutions for health problems. With regard to the role of education systems in increasing health and nutritional awareness of students, more than a third of the respondents thought that educational systems did not appear to increase the health and nutritional awareness of students. More than half of the respondents, acknowledged that no time is allocated for health education and it appears that there is a lack of attention to educating students about adopting sound nutritional habits and to keeping their environment clean. Health inspectors are not invited to schools to give lectures and make students aware of health and nutritional problems. The scholastic day does not also include educational activities on health and nutritional matters, and students are not encouraged to participate in health activities. More than two thirds of the respondents were of the strong opinion that educational curricula at all levels of the scholastic career suffers from insufficiencies of health and nutritional enlightenment. Schools ought to have flexible programmes which take into account students' and community health and social needs. They should serve as vehicles for primary health care and emphasis should be placed on practical teaching for use in everyday life. Teachers should be encouraged to use, as subjects for study, the problems of real life in the home and community of interest to children at different levels of growth and development. Schools deserve considerable attention in any national health policy which is supposed to stress cooperation with other sectors in the society. If education broadens the knowledge and understanding of people, efforts should be made to eliminate illiteracy since it presents the strongest obstacle and hindrance to development and progress and it is also, in

particular to the spread of unhealthy habits and misconceptions regarding diet. For the success of health education programmes the following factors should be kept in mind:

- 1) Health education programmes ought to be clear, precise and appropriate to the abilities of people, so they can easily understand the advice and apply it in their daily life.
- 2) Programmes should concentrate on problems which are related to people's requirements and needs. People usually respond to matters which touch their immediate needs and interests.
- 3) Programmes and health messages should be related to people's cultures, customs and traditions. It is to be borne in mind that, it is difficult to change the practices and customs of people and in normal circumstances people tend to resist change in their habits and customs. Therefore, programmes should encourage people to disregard the unhealthy habits and to replace them with sound and hygienic ones.
- 4) Training programmes should be reasonable and acceptable for the targeted people so they can act upon them.
- 5) Health education is part of general education of the society. It is difficult for a society to reach an acceptable health awareness where there is a high illiteracy rate with belief in superstitions. Therefore, efforts to raise education, nutrition, and health standard should be taken simultaneously and seriously.

There is also a strong need for the socio-cultural approach in health education at all levels of education. Therefore, the curriculum should adapt to the socio-cultural environment of the Saudi people. This is because the socio-cultural factors effect greatly the individual's health behaviour and have consequences for health development and policy. This study affirmed that, there is a great need to improve the types of food and drinks that are sold at school canteens and that the canteen should aim at achieving an educational and dietary goal which is integrated with the mission of the school to develop dietary awareness instead of gaining profits. The school dietary system can be improved by applying the following procedures:

- a) Only good and high dietary value food items that are consistent with needs of the students at different levels of age must be provided in the school canteen.
- b) Hygiene regulations must be strictly adhered to in all places where food and beverages are served.
- c) Personal hygiene of staff involved in food services in all cafeterias and canteens must be regularly checked.
- d) Schools should provide healthy meals for students instead of selling junk food.
- e) Directive signs must display clearly the dietary value of food items.
- f) A dietary exhibition must be held annually that coincides with the International Day of Diet in all schools. Also, dietary contests are recommended to be conducted among students with adequate awards to be given for good performers.
- g) A dietary unit must be established under the supervision of dietitian in each educational area to supervise and monitor the dietary activities within the school's area.

Health authorities and educational institutions should support reorienting and training programmes for expatriate health personnel. Many health workers are foreigners who are facing difficulties in language and cultural communication with Saudi people. Not only that, but also, many of them lack adequate knowledge about the ecology of health, diseases and the socio-cultural background of Saudi society. This is important since health workers are supposed to be the most important source of information for parents who need to improve their children's chance of survival and healthy growth and to reduce the rate of death and malnutrition among their children. Giving parents more information about diet health and illness is a very important factor in improving family health and diet. Also health educators should help parents to become partners in health care and to develop sound health behaviour.

The family, as a social institution, does not function independently of other social institutions, therefore, strategies to influence family development of positive health behaviour need to adapt an ecological perspective. To achieve this goal various governmental agencies such as Ministries of Education, Agriculture, Municipality and Social Welfare should cooperate with the health sector to promote family health and dietary awareness. The study found that there is a lack of scientific

guidelines on diet and health. However, it is worth keeping in mind, that simply providing health guidance and information will not necessarily change habits; however, encouraging and training people, may prove productive in changing dietary habits for the better.

Moreover, the respondents thought that there are several means to improve diet and health knowledge in society. More attention should be paid to health and dietary awareness in the educational system. This appears to be the most important means of improving nutritional health awareness in society, according to the majority of the respondents. Increasing health and nutritional programmes on TV and radio appeared to be the second means. In the meantime giving lectures and holding symposia on health and nutritional matters were third and fourth choices. And finally hospitals and health centres should pay more attention to preventive medicine and make people aware of health and nutritional problems as one of the most important means of promoting health and dietary awareness in the society.

Other dimensions of change, are apparent in the Saudi family context. Four of these features will be put forward. Firstly, depending on foreign domestic workers to carry out most of the family's duties is a very conspicuous sign of change, which is taking place on a large scale within the last 20 years. Consequently it is expected that some of the Saudi family's functions and roles have been minimized. Secondly, serving food and drinks on an extravagant scale in parties and social ceremonies seems to be on the increase not only in cities, but also, in rural areas of the Kingdom. This feature not only imposes costly economic burdens on the family but also, might lead to the occurrence of many health and nutritional problems. Thirdly, travelling abroad could be considered as one of the factors, which might help in introducing some new diet and dietary habits which have more negative health effects than positive ones, as has^{been} mentioned in the previous chapters. Finally, women's participation in various activities and jobs outside the house has created a new societal situation, where the family becomes more dependent on foreign domestic workers to carry out many of the family's

duties, as it has been affirmed above. In addition to that, ordering restaurant' food becomes an ordinary habit, either for family's meal or for social occasions.

From the above general recommendations about health and dietary conditions, and the situation in Saudi society one has to look very closely to offer specific recommendations about Al-Oud quarter as an example of many old quarters in Al-Riyadh and other cities in the kingdom as it has been suggested in the researcher's previous study (1989:296-7). These recommendations are valid for this study since there is only 7.8% economic improvement during the period between these two studies 1989 and 1998. This study found that the level of education, income, health and nutritional awareness of respondents of this quarter is lower than that of the other three quarters in Riyadh. There is therefore, an urgent need to improve family nutritional and health care in the Al-Oud quarter and to increase health awareness programmes about health matters such as children's health care, family and children's nutrition, dietary habits, personal and home hygiene, antenatal and post natal care and environmental sanitation. In this quarter, poverty has been and still is a social problem. In this study 80.2% of the respondents were of low income. Many of them are assisted by government, which can only alleviate their poor conditions, and could not eliminate their poor situations completely. Many people do not have opportunities to improve their living standard sufficiently through their own efforts, mainly due to lack of education or training. Therefore, people are in need of more education or training, which can help provide them with more qualifications for higher paid jobs. People in this quarter are in need of extra encouragement or attention and training towards well-paid jobs, so that they can improve their diet and living standards.

Suggestions for Further Research

This study has not covered all problems and effects of diet and dietary habits on the health of the Saudi family, in the city of Riyadh, but, it has pointed out some major problems and important issues connected with this problem. There is a great need for more field work research to investigate in-depth and on a wider scale, the realm of dietary and health awareness in Saudi

families. Further, social and nutrition surveys ought to be considered, not only for maintaining diet and dietary habits of people, but also, for making a data base for health policy decision making and for projecting future consumption trends. Survey methods which are appropriate for Saudi society should be developed to understand regional diet, dietary habits and practices. There is a need for further research studies to make definite conclusions about the relationship between diet, dietary habits and disease. The various governmental agencies, related either directly or indirectly to health and nutrition should cooperate in order to raise health, dietary awareness and conditions in the society, and it is hoped that this study has raised many questions for future research.

APPENDIX -A-

Respondent's attitudes about health and dietary habits and practices in their family in particular and in Saudi family in general

Statement one shows that 90% of the respondents think it is very important to wash fruits and vegetables before eating. While only 5.8% think it is not necessary. It is a good sign that the majority of respondents are aware about the negative health effects of eating fruits and vegetables without washing. This result confirms that study finding in table 4-33 where the majority of respondents 96.8% wash fruits and vegetables before eating.

Statement two demonstrates that 70% of the respondents disagree strongly and 10% disagree that cutting vegetables to pieces before washing is a recommended hygienic habits, while only 14.2% of them agree. It is a good sign that 80% of the respondents are aware of the importance of washing vegetables before cutting.

Statement three reveals that there is a strong agreement 97.7% among the respondents that eating fruits and vegetables are very important for health while only few respondents 1.2% think they are not important. In this regards, it could be seen as a very positive health awareness of the respondents. This result confirms our findings in table 4-7 where most respondents eat fruits and vegetables everyday.

Statement four indicates that 61% of the respondents disagree strongly that health will not be effected by not drinking milk, and 21% disagree. While 13.9% of the respondents agree. And 3.5% of the survey sample have no opinion and do not know. This finding is an indication of respondents health knowledge about the importance of milk for their health.

Statement five shows that there is strong agreement 73.2% among the respondents that it is harmful to health if a person drinks unboiled fresh milk. While 20% of the respondents think it is not harmful. They may be unaware of negative health effects of drinking unboiled fresh milk that may cause some diseases like brucellosis which is on the increase in Saudi society, as annual health report (1989) indicated "the number of brucellosis cases had increased as follows: 1985: 488 cases in 1986 , the number jumped to 2301. In 1987, it was 5224; and in 1988, the number was 8372 cases'. [Annual health report 1989:9].

These figures confirm our findings in table 4-32 where more than half of the respondents 51.3% never drink unboiled fresh milk.

But, one has to have in mind, that, this study has been carried out in a big urban centre. While the figures in rural, remote and bedouin areas are expected to be lower than our finding.

Statement six reveals that 85.8% of the respondents agree that reading expiry date on canned food before buying it, is necessary, and 6.5% agree somewhat. While only few 5.5% disagree strongly, and 2.3% disagree. This result confirms our finding in table 5-51

where the respondents have chosen date of expiration as their main concern in buying food product which could be regarded as a positive health awareness of the respondents.

Statement seven demonstrates that there is strong agreement 84.5% among the respondents that breakfast is necessary as an important meal. While only 14.2% think it is not necessary. They may be unaware of the importance of breakfast for health.

This figure confirms the study's findings where the majority of the survey sample have breakfast every day.

Statement eight shows that 71.3% of the respondents disagree strongly and 11.9% disagree about using the same vessel for drinking by all family members. While 14.6% agree to the use of same vessel for drinking by all family members, which was common habit in the past. But nowadays, this habit could be seen on the decline And this is one sign of many changes which are taking place in the Saudi society.

The respondents who are in favour of drinking from the same vessel may be unaware of the negative health effects in spreading contagious diseases among family members.

These figures agree with our finding in table 5-23 where the majority of respondents, 72.9% and their family never drink from the same vessel during meals.

Statement nine demonstrates that 81.9% of the respondents disagree strongly and 11% disagree about not washing hands before and after eating. While only few 2.6% agree and 4.5% agree somewhat. They may be unaware of bad and harmful health effects of not washing hands before and after eating.

This result confirms the study's findings in table 5-28 where the majority of respondents 89% ask their children to wash their hands before and 93.5% after eating.

Statement ten clearly demonstrates that there is strong agreement 92.9% among the respondents that it is very important for health to clean teeth in the morning and evening. While few 7.1% think it is not important. They may be unaware of negative health influences of not cleaning teeth. This finding could be regarded as an indication for more health awareness programmes to make people know that tooth brushing and cleaning is the most effective way of preventing decay and inflammation of teeth and gums.

Statement eleven shows that 44.5% of the respondents disagree strongly and 15.8% disagree about taking sweets and dessert after main meals which helps digestion. It could be regarded as positive health awareness of the respondents while 14.5% agree that taking sweets and desserts after main meals helps digestion. And 25.2% do not know about positive or negative influence. They need to be aware of the negative health effects of eating sweets and dessert excessively after main meals.

Statement twelve indicates that 38.7% of the respondents agree that using butter in preparing dessert and other kinds of food increases their nutritional values. They may be unaware of the high level of calories in butter which might have bad influence on their health. While the respondents who disagree strongly 21% and disagree 17.4% are aware of the negative health effects of fatty food.

Statement thirteen demonstrates that 48.1% of the survey sample disagree strongly and 14.8% disagree about adding various colouring materials, do not effect the nutritional values of the food. In this regards it could be seen as a very positive health knowledge about the harm and bad health effects of these colouring materials. While the respondents who agree 21% and do not know 16.1% are in urgent need of more health knowledge and awareness about healthy food.

Statement fourteen reveals that 45.2% of the respondents do not know that drinking grapefruit juice in the morning helps loosing weight. Also, 10.6% of the survey sample disagree strongly and 4.8% disagree. The respondents who agree 26.8% and agree somewhat are 12.6%.

Statement fifteen reveals that there is strong disagreement 48.7% among the respondents about drinking tea after main meals helps digestion. They may be unaware of the negative health effects on digestion, of drinking tea after main meals. While the respondents who agree 19% and agree somewhat 17.1% may be unaware of its bad effects on their health. These people and those who do not know 15.2% are in urgent need of health awareness programmes to improve their health knowledge in general and not drinking tea after main meals in particular.

Statement sixteen indicates that only 27.1% of the respondents disagree strongly and 9% disagree about gum chewing in the morning is useful for health. In this regards, it could be seen as a very positive health awareness while the respondents who agree 11.6% and agree somewhat 8.1% that gum chewing in the morning is useful for health might be unaware of its negative health effects. So these people and those who do not know 43.9% are in need of health awareness in this matter.

Statement seventeen demonstrates that 38.4% disagree strongly and 11.9% disagree that spices and chilly pepper protect against cold diseases are aware of their negative effects on their health. While the respondents who agree 25.2% and do not know 24.5% are in need of making them aware of harmful health effects of the excessive consumption of hot spices and chilly pepper.

Statement eighteenth shows that more than two thirds of respondents 93.2% disagree that bottle feeding does not vary from breast-feeding as a healthy methods of feeding babies.

Which could be regarded as a good sign of respondents health knowledge about the advantages of breast feeding for their babies. While only few of the survey sample 3.9% agree.

Statement nineteen indicates that the majority of respondents 84.5% are in favour that mothers should keep away as far as possible from bottle feeding their babies. They are aware of negative health effects of bottle-feeding. Their fearful sense might arise from the preparing in unhygienic methods or the amount and the kind of milk not suitable for baby's health needs. It is clear that these people have positive health attitude about bottle-feeding, but they might not apply them in their daily life where the study findings in table 5-38 shows that the respondents who use bottle feeding are more than those of breast feeding. The respondents who disagree 13.2% may be are unaware of negative health effects of bottle-feeding. This trend might be alarming, health agencies should work harder to change this trend to natural feeding which is healthier and suitable for babies needs.

Statement twenty demonstrates that more than two thirds of respondents 89.1% agree about organizing child's meal time. While only 9.4% are not in favour of following specific time for feeding their children. The respondents who are in favour of following specific time in feeding their children have knowledge of healthy benefits of this practice for their children.

Statement twenty one reveals that only 16.1% of the respondents agree that it is not necessary to prepare special meals for children. While more than two thirds of the respondents 81.6% are of the opinion that it is necessary to make special meals for children which meet their nutritional needs. This figure could be regarded as a good sign of respondent's positive health attitude. But they might not apply them in their daily life. That is true where the study finding in table 5-12 shows that 81% of the respondents did not prepare special meals for their children. And the children ate from the family meals.

Statement twenty two demonstrates that the majority of respondents 87.4% agree about family's main meal time must be observed. While few of the survey sample 12% disagree. The respondents who are in favour in organizing their meals time are aware of the health advantages of eating in specific time for their health.

Statement twenty three shows that 50.9% of the respondents disagree about using microwave in cooking does not effect health. Few of the survey sample 16.7% agree. While the remainder of the respondents 32.3% have no opinion and do not know.

Microwave as a cooking appliance is a newly introduced and used in the Saudi kitchen. And this fact is well documented in this survey, where, in table 4-23 the respondents made it their last choice in their cooking appliance. Also, in table 4-22 more than two third of the study sample acknowledged that, they never used it.

Statement twenty four reveals that the majority of respondents 93.9% agree that modern cooking appliances help women save time and efforts. While only few 2.6% disagree and 3.2% have no opinion and do not know.

Statement twenty five shows that more than two thirds of respondents 93.5% agree that modern cooking appliances help obtaining widely diversified foods and drinks. While only few 4.2% disagree, and 2.3% have no opinion and do not know.

Statement twenty six indicates that most respondents 93.9% agree that eating and drinking vessels used by a patient must be separated specially in the case of contagious diseases, from those of the family. They are aware of the danger and negative health effects of transmitting the disease among their family members. While few 5.5% disagree. They may be are unaware of the dangers of using a patient's things generally, and specially in the case of contagious disease.

Statement twenty seven shows that the majority of respondents 84.6% think it is necessary to prepare special food for family members' patients to meet their health needs. While only few 12.3% think it is not necessary. And the remainder of the respondents 3.2% have no opinion and do not know. These few respondents need to be aware of the importance of preparing special meal for patients to meet their health needs.

Statement twenty eight reveals that more than two thirds of respondents 82.9% think it is necessary to prepare special food for family's elderly member to meet his/her health and age needs. While few of the survey sample 14.6% think it is not necessary. And 2.6% have no opinion and do not know. These respondents need to be aware of the importance of preparing specific food for the elderly to meet their health and age needs.

Statement twenty nine indicates that there is strong agreement 94.5% among the respondents about health and hygienic risk which could be caused by foreign housemaids and drivers living with family without genuine health check-up, only 4.2% disagree strongly. And 1.3% do not know about the positive or negative influence.

Statement thirty reveals that there is strong agreement 97.4% among the respondents that there should a general health check up for drivers and housemaids before they can join the family, in order to make sure they are free of diseases. They are aware of the bad health effects on the family if the housemaid or driver have health problems especially in the cases of contagious disease. While only few 1.9% disagree. May be because their health knowledge is poor and they are not aware of the presence of unhealthy foreign housemaid and driver in the family. So there is a strong agreement among the respondents that foreign drivers and housemaids must have a general check-up before coming to the house in spite of health

certificate which they obtain as a requirement to enter into the country because some of these health certificates are forged.

Statement thirty one shows that there is strong agreement 75.8% among the respondents that mass-media help improving hygienic and nutritional awareness of the family members. While 15.5% disagree. And the remainder of the respondents 8.4% have no opinion or do not know. Therefore, mass-media ought to be kept in mind in the future to spread and intensify health and nutritional awareness in the society.

Statement thirty two clearly demonstrates that there is strong agreement 84.9% among the respondents that health programmes on Saudi Radio and TV need improvement. While 3.3% of the respondents are satisfied with these medical programmes. A few 8.1% have no opinion or do not know. This figure confirms the finding in table 6-22 which shows that 37.1% of the respondents think that Ministry of Information officials give little attention to make people aware of health and nutritional problems in the society and diseases resulting from malnutrition. Also, table 6-34 shows that 91.6% of respondents think that increasing health and dietary awareness programmes on radio and TV is the most important and effective means in improving dietary and health awareness in the society. The respondents are not satisfied of the Saudi radio and TV health programmes and messages. Therefore, the Ministry of Information should review and improve their health messages and programmes through real efforts.

Statement thirty three indicates that there is strong agreement 84.2% among the respondents about the TV food advertisements, that concentrate on unhealthy food stuff, as being aimed at financial gain only. While 7.4% disagree and 8.1% have no opinion or do not know. These figures confirm our findings in table 6-2 which reveals that the respondents think TV food and drink advertisements are not useful for family members, father, mother; and children 23.9%, 24.8% and 35.5% respectively and harmful 3.5% 4.3% and 8.1%.

Statement thirty four indicates that there is strong agreement 81% among the respondents that TV food advertisements have unhealthy effects on family's food especially children's. While only few 11.6% disagree. And 7.4% have no opinion or do not know.

Statement thirty five clearly demonstrates that 94.5% of the respondents agree that food advertisement must be monitored and properly directed in order to bring about good public health for individual, family and society. While only few 1.9% disagree. These figures confirm the findings in table 6-3 which shows 52.9% of the respondents reported that TV Ads should be subjected to control and to exclude harmful advertisements especially for children.

Statement thirty six reveals that there is strong agreement 82.9% among the respondents that health and nutritional articles published by newspapers, and magazines need improvement

while only few 5.8% are satisfied with these medical articles and think there is no need to improve them. And 8.7% have no opinion or do not know. Those who are in-charge of writing and presenting medical or health messages and articles in the newspapers should improve the way they put them to the public.

Statement thirty seven shows that more than two thirds of respondents 82.9% agree that educational curricula at various levels suffers from insufficiency of health and nutritional enlightenment for both male and female pupils and students. While only very few 7.7% disagree. And the remainder have no opinion and do not know.

This result confirms the study findings in table 6-31 which reveal that 56.8% of the respondents think that the role of schools in promoting health and dietary awareness of pupils and students is inadequate.

Statement thirty eight clearly demonstrates that the majority 95.1% of respondents agree that health and nutritional awareness should be further stressed in educational curricula in a more comprehensive way that meets pupils and students capabilities at various levels.

This result confirms that the study finding in table 6-32 which shows that 57.4% of the respondents think that no time is allocated for health education which should be included in the educational subjects, and is one feature of the inadequacy of schools in promoting health and dietary awareness of the pupils and students. Only very few 4.5% disagree and 2.3% have no opinion or do not know.

Statement thirty nine reveals that there is strong agreement 83.6% among the respondents that public health and nutritional enlightenment effort being made by official agencies is insufficient while only 5.8% disagree. And 10.6% have no opinion or do not know.

These figures confirm the findings in table 6-21 which shows that 53.2% of the respondents reported that the role of health agencies in making people aware of health and dietary habits is inadequate.

Statement forty shows that nearly most respondents 96.4% agree that health and nutritional enlightenment must take the priority in health programmes. While very few .6% disagree and 2.6% have no opinion or do not know.

Statement forty one clearly demonstrates that there is a strong agreement 93.2% among the respondents that fast food restaurants' wide spread helps increase in the consumption of frozen, canned and fried food by Saudi families which may have bad effects on health, while only very few 4.5% disagree. And the remainder of the respondents 2.3% have no opinion and do not know.

Statement forty two shows that more than two thirds of respondents 83.9% agree that widespread of frozen and canned food encourages family to consume it more than natural and

fresh food. While 12.9% of the survey sample disagree. And 3.2% have no opinion or do not know. These findings in statements 41,42 could be regarded as an indication of poor dietary knowledge about the negative health influences of excessive consumption of these foods.

Statement forty three reveals that there is strong agreement 86.8% among the respondents that inadequate supervision over restaurants by government officials is responsible for the increase in food poisoning incidents. While only few of the survey sample 4.9% disagree. And 8.4% have no opinion or do not know.

This result confirms the study finding in table 6-28 which shows that 44.8% of the respondents think that poor or lack of control and supervision on restaurants by health authorities could be one of the main causes of food poisoning.

Statement forty four indicates that more than two thirds of respondents 90.3% agree that mother is the one who selects food for family meals. And 9.3% disagree. It is a fact in Saudi society that, always woman is the queen in her household kitchen and she is in-charge of its functions.

Statement forty five shows that the majority of respondents 79% think that both mother and father select food for family meals. While 20% disagree. And few 1.4% have no opinion or do not know.

This situation could be of little difference, as far as man : husband, father, brother, and child is concerned. Where certainly, he has a lot to say in what shall be the household meals?

Statement forty six reveals that there is a very strong agreement 95.2% among the respondents that mother selects kinds of food which father and children prefer. While only very few 3.5% disagree and 1.3% have no opinion or do not know. It is clear from this statement that woman used to cook the food is preferred by her husband and children more than her preference.

Statement forty seven indicates that there is nearly complete agreement 96.4% among the respondents that there is a big change in family diet from the past to present time. While only very few 1.2% disagree. And 2.3% have no opinion or do not know. This figure confirms the study finding in table 4-10 which shows that 71.3% of the respondents reported that their diet have been changed in the last 20 years.

Statement forty eight clearly demonstrates that the majority of respondents 77.7% think that family's diet in the past was healthier than it is today. While 14.2% disagree and 2.9% have no opinion or do not know.

Statement forty nine reveals that more than two thirds 85.8% of respondents agree that nowadays Saudi families consume starches, fats, and sweet food more than fresh fruits and

vegetables. And the percentage of the respondents who disagree was 11.3% while the respondents who do not know represented 2.9%.

Statement fifty indicates that more than two thirds of respondents 83.5% agree that family consume beverages more than fresh juices and milk. While 15.5% disagree.

These findings could be used as an indication of the negative health awareness of respondents about healthy food and beverages. And bad health effects of the excessive consumption of these foods and drinks. These figures confirm the findings in table 4-31 which shows that 30.7% of the respondents think that Saudi diet is either far from balanced diet or harmful to health.

Statement fifty one indicates that most respondents 86.2% in favour of the diet of Saudi family is one factor may cause some diseases like diabetes, hypertension, heart diseases; and arteriosclerosis etc. While 7.1% disagree and the remainder of the survey sample 6.8% have no opinion and do not know. These figures confirm the study findings in table 4-36 which shows that 81% of the respondents think that changes in the Saudi family diet causes many diseases. Also, these findings could be regarded as a dangerous and alarming sign for future health problems. Therefore, a national concern has to have mass efforts to readdress this dangerous situation.

Statement fifty two reveals that most respondents 89.3% think that customs and traditions have a major influence on family diet. While 6.8% disagree and 3.9% have no opinion or do not know.

Statement fifty three clearly demonstrates that 79.4% of the respondents are of the opinion that Saudi families are interested in taking new food regardless of the nutritional values. And 15.1% disagree. While 5.5% tend to have no opinion or do not know. This finding could give a description of the reality of Saudi family's inclination, attitude and opinion as far as their dietary and nutritional knowledge and preference are concerned, regardless of their negative effects.

Statement fifty four shows that 73.6% of the respondents think that travelling abroad has great effect on the change in the Saudi family diet. While 16.5% disagree. The remainder of the respondents 9.7% have no opinion and do not know. This fact confirms the study's finding in table 4-13 which reveals that 43.8% of the respondents mentioned that travelling abroad has its effects in changing their diet.

Statement fifty five indicates that 62.2% of the respondents agree strongly that foreign workers inside and outside houses have great effect on bringing many kinds of food, which were unknown to the Saudi family in the past. While 30% disagree. And a few 7.7% do not know.

The fact of occurrence of changes in Saudi family in general, and their diet in particular is demonstrated in the above statement.

Statement fifty six clearly demonstrates that more than two thirds 77.1% of respondents agree that in spite of increased food availability, many family members especially children, suffering from malnutrition diseases. While 10.9% disagree. The remainder of the respondents 11.9% tend to have no opinion and do not know. This finding could be regarded as alarming sign of future health problems. Therefore, the national health policy should put dietary and health awareness as the most important task for the future.

Statement fifty seven shows that most respondents 93% agree that Saudi family needs health and nutritional awareness. While only few 5.8% disagree and very few 1% have no opinion and do not know. The acknowledgement of most of the study sample is in the urgent need of bringing to the Saudi family's health and dietary awareness, to necessitate the overall review and evaluation of the health policies.

Statement fifty eight shows that there is strong agreement 93% among the respondents that education has a positive effect on food and nutritional habits. While few of the survey sample 4.2% disagree. And few 2.9% do not know. It is a good sign of the positive health awareness of the respondents about the role of education as an agent of change in people's dietary knowledge and behaviour and to make them more aware of the usefulness of healthy food and dietary habits.

Statement fifty nine reveals that more than two thirds of respondents 80.3% agree that high income has a positive effect on having healthy diet. While 13.8% disagree. The remainder of the respondents 5.8% tend to have no opinion and do not know. High income could either positively or negatively effect on people's diet. If the high income is soundly and logically used, it has a positive effect on having healthy diet. But, if it is used in the opposite, it has a negative effects on having unhealthy diet.

Statement sixty shows that the majority of respondents 88.8% are of the opinion that Saudi family looks after food decoration and taste rather than its nutritional values. While only 8.4% disagree. And very few 2.6% tend to have no opinion and do not know. The unconcerning attitude about the nutritional value of food is an alarming situation and health officials and health policies ought to be take these factors very seriously in order to improve health and dietary conditions in the future.

Statement sixty one clearly demonstrates that there is a strong agreement 59.7% among the respondents that Anaemia and malnutrition diseases are considerably high in Saudi society. While 18.1% disagree. The remainder of the respondents 22.3% have no opinion and do not know. This figure confirms the study finding in table 4-36 which indicates that 41.3% and 37.3%

of the respondents think that anaemia and malnutrition respectively are unhealthy results from the changes in Saudi family diet.

Statement sixty two reveals that more than half of the respondents 67.5% think that there is a strong connection between dietary habits and many malnutrition diseases in Saudi society. And 12.3% disagree. While 20.3% have no opinion and do not know. This result agrees with study finding in table 4-36 which shows that 37.7% of the respondents are of the opinion that malnutrition diseases are unhealthy result from the changes in Saudi family diet.

Statement sixty three clearly demonstrates that there is strong agreement 95.8% among the respondents that food extravagance is being practiced widely in dinner parties and social occasions. While only few 3.2% disagree. And 1% do not know. This kind of situation creates multitude of social losses in economic and health terms. Therefore, a national concern should be made in order to correct and change positively people's eating habits. These figures confirm the findings in table 4-27 which indicates that 86.1% of the respondents think that there is extravagance in food and drinks in parties, feasts, and social occasions.

Statement sixty four indicates that 65.5% of the survey sample agree that it is necessary for parents to have family planning to enable them to provide best health and nutritional care for their children. While 31.6% of the respondents disagree. The remainder of the respondents 2.3% tend to have no opinion and do not know.

It is a good sign that more than half 65.5% of the respondents are aware of the advantages of family planning to enable the parents to provide best health and nutritional care for their children. This high percentage of people who are in favour of family planning is an astonishing fact and it is one aspect of social change in general.

The distribution of respondents according to their opinions and attitudes about health and dietary habits in their families in particular and in Saudi family in general

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		No Reply		Total	
		FR	%	FR	%	FR	%	FR	%	FR	%	FR	%	FR	%
1	It is not necessary to wash fruits & vegetables before eating.	13	4.2	5	1.6	1	0.3	8	2.6	279	90	4	1.3	310	100
2	Cutting vegetables to pieces before washing is a recommended hygienic habit.	32	10.3	12	3.9	16	5.2	31	10.0	217	70	2	.6	310	100
3	Eating fresh vegetables & fruits doesn't help human health.	2	.6	2	.6	3	1.0	19	6.1	284	91.6	0	0.0	310	100
4	I don't think human health will be affected by not drinking milk.	12	3.9	31	10	11	3.5	65	21.0	190	61.0	1	.3	310	100
5	I don't think it is harmful to health if a person drinks fresh milk directly without boiling it.	49	15.8	15	4.8	18	5.8	44	14.2	183	59.0	1	.3	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		Total	
		Fr	%	Fr	%	FR	%	FR	%	FR	%	FR	%
6	It is necessary to read expiry date on canned food before buying it.	266	85.8	20	6.5	0	0.0	7	2.3	17	5.5	310	100
7	Breakfast is not necessary meal.	14	4.5	0	9.7	4	1.3	44	14.2	218	70.3	310	100
8	The habit of using same vessel for drinking by all family members is apart of the family's customs and traditions and should not be abandoned whatever are the reasons .	20	6.5	25.	.1	7	2.3	37	11.9	221	71.3	310	100
9	It is not necessary to wash hands before and after eating.	2	6	3	1.0	0	0.0	15	4.8	290	93.5	310	100
10	It is not necessary for the person to clean his/her teeth with tooth brush and paste morning and evening.	8	2.6	14	4.5	0	0.0	34	11	254	1.9	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		Total	
		Fr	%	Fr	%	FR	%	FR	%	FR	%	FR	%
11	Taking sweets and candies after main meal helps digestion.	26	8.4	19	6.1	78	2.2	49	15.8	138	44.5	310	100
12	Using butter in preparing desserts and other kinds of food increases their nutritional value.	74	23.9	46	4.8	71	22.9	54	17.4	65	21.0	310	100
13	Adding various colouring materials do not effect the nutritional value of food	45	14.5	20	6.5	50	16.1	46	14.8	149	48.1	310	100
14	Drinking grape fruit juice in the morning helps loosing weight.	83	26.8	39	2.6	140	45.2	15	4.8	33	10.6	310	100
15	Drinking tea after main meals helps digestion	59	19	53	17.1	47	15.2	56	18.1	5	30.6	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		No Reply		Total	
		Fr	%	Fr	%	FR	%	FR	%	FR	%	FR	%	FR	%
16	Gum chewing in the morning is useful for health	36	11.6	25	8.1	136	43.9	28	9.0	84	27.1	1	3	310	100
17	Spices and chilly pepper protect against cold diseases	30	9.7	48	15.5	76	24.5	37	11.9	119	38.4	0	0.0	310	100
18	Bottle-feeding does not vary from breast-feeding as a healthy method to feed babies.	8	2.6	4	1.3	9	2.9	24	7.7	265	85.5	0	0.0	310	100
19	Mother should keep away as far as possible from bottle-feeding of her baby	225	72.6	3.7	11.9	7	2.3	17	5.5	24	7.7	0	0.0	310	100
20	Organizing child's meal time must be observed	225	72.6	51	16.5	4	1.3	16	5.2	13	4.2	1	.3	310	100
21	It is not necessary to prepare special meal for children to meet their nutritional needs	17	5.5	33	10.6	7	2.3	45	14.5	208	67.1	0	0.0	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		No Reply		Total	
		Fr	%	Fr	%	FR	%	FR	%	FR	%	FR	%	FR	%
22	Family's main meal time must be observed	182	58.7	89	28.7	2	6	25	8.1	12	3.9	0	0.0	310	100
23	Using microwave in cooking does not effect health	24	7.7	28	9.0	100	32.3	54	17.4	104	33.5	0	0.00	310	100
24	Modern cooking appliances help woman save time and effort	244	78.7	4.7	15.2	10	3.2	7	2.3	1	.3	1	.3	310	100
25	Modern cooking appliances help obtaining widely diversified dishes and drinks.	232	74.8	58	18.7	7	2.3	7	2.3	6	1.9	0	0.0	310	100
26	Eating and drinking vessels used by a patient must be separated from those of the family, if the disease is contagious.	274	88.4	17	5.5	2	6	8	2.6	9	2.9	0	0.0	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		Total	
		Fr	%	Fr	%	FR	%	FR	%	FR	%	FR	%
27	It is not necessary to prepare special food for family member patients to meet his health needs.	18	5.8	20	6.5	10	3.2	29	9.4	233	75.2	310	100
28	It is not necessary to prepare for family elderly member special food that meet his/her health needs	25	8.1	20	6.5	8	2.6	43	13.9	214	69.0	310	100
29	Foreign house-maids and drivers living with family without genuine health check-up cause health and hygienic risk.	283	91.3	10	3.2	4	1.3	0	0.0	13	4.2	310	100
30	House maid and driver must pass medical check-up before they can join the family in order to make sure they are free of any diseases. Medical certificate issued by health authorities in their countries should not be trusted.	287	92.6	15	4.8	2	.6	4	1.3	2	6	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		No Reply		Total	
		Fr	%	Fr	%	FR	%	FR	%	FR	%	FR	%	FR	%
31	Mass media help improving hygienic and nutritional awareness of the family members.	115	37.1	120	38.7	26	8.4	35	1.3	13	4.2	1	3	310	100
32	Health programmes in Saudi Radio and TV need improvement	207	66.8	56	18.1	36	11.6	7	2.3	3	1.0	1	3	310	100
33	TV food advertisements concentrate on unhealthy food stuff, as being aiming at financial gain only.	192	61.9	69	22.3	25	8.1	9	2.9	14	4.5	1	3	310	100
34	Television food advertisement have unhealthy effects on family's food especially children.	185	59.7	66	21.3	23	7.4	19	6.1	17	5.5	0	0.0	310	100
35	Food advertisements must be monitored and properly directed in order to bring about the very good public health for the individual, family and society.	261	84.2	32	10.3	11.0	3.5	2	.6	4	1.3	0	0.0	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		No Reply		Total	
		Fr	%	Fr	%	FR	%	FR	%	FR	%	FR	%	FR	%
36	Health and nutritional articles published by newspapers and magazines need improvement.	167	53.9	90	29	35	11.3	11	3.5	7	2.3	0	0.0	310	100
37	Education curricula in various educational levels suffers from insufficiency of health and nutritional enlightenment for both male and female students.	187	60.3	70	22.6	27	8.7	14	4.5	10	3.2	2	.6	310	100
38	Health and nutritional awareness shall be further stressed in educational curricula in a more comprehensive way that meets students capabilities in various study levels.	259	83.5	36	11.6	10	3.2	1	.3	4	1.3	0	0.0	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		No Reply		Total	
		Fr	%	Fr	%	FR	%	FR	%	FR	%	FR	%	FR	%
39	Public health and nutritional enlightenment efforts made by official agencies is insufficient.	177	57.1	82	26.5	33	10.6	7	2.3	11	5.5	0	0.0	310	100
40	Health and nutritional enlightenment must take priority in health programmes.	263	84.8	36	11.6	8	2.6	2	.6	0	0.0	1	.3	310	100
41	Fast food restaurants wide-spread help the increase consumption of Saudi families of frozen, canned, and fried food which have had effects on health.	258	83.2	31	10.0	7	2.3	11	3.5	3	1.0	0	0.0	310	100
42	Widespread use of frozen and canned food encourages family to consume more than natural and fresh food.	203	65.5	57	18.4	10	3.2	19	6.1	21	6.8	0	0.0	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		Total	
		Fr	%	Fr	%	FR	%	FR	%	FR	%	FR	%
43	Inadequate supervision over restaurants by Government officials is responsible for the increase in food poisoning incidents	209	67.4	60	19.4	26	8.4	8	2.6	7	2.3	310	100
44	Mother is the one who selects kinds of food in family meals.	178	57.4	102	32.9	1	.3	24	7.7	5	1.6	310	100
45	Mother and father select kinds of food in family meals.	139	44.8	106	34.2	3	1.0	23	7.4	39	12.6	310	100
46	Mother selects kinds of food, which father and children prefer.	212	68.4	83	26.8	4	1.3	9	2.9	2	.6	310	100
47	There is a big change in family diet from past to present time.	241	77.7	58	18.7	7	2.3	2	.6	2	.6	310	100
48	Family's diet in the past was more healthy than it is today.	188	60.6	53	17.1	25	8	32	10.3	12	3.9	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		Total	
		FR	%	FR	%	FR	%	FR	%	FR	%	FR	%
49	Nowadays families consume starches, fats, and sweets in food more than fresh fruits and vegetables.	194	62.6	72	23.2	9	2.9	19	6.1	16	5.2	310	100
50	Families consume beverages more than fresh juices and milk.	179	57.7	80	25.8	3	1.0	25	8.1	23	7.4	310	100
51	The diet of Saudi families is one factor which may cause some diseases like diabetes, hypertension, heart diseases and arteriosclerosis etc.	184	59.4	83	26.8	21	6.8	12	3.9	10	3.2	310	100
52	Customs and traditions have a major influence on family diet.	179	57.7	98	31.6	12	3.9	16	5.2	5	1.6	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		No Reply		Total	
		FR	%	FR	%	FR	%	FR	%	FR	%	FR	%	FR	%
53	Saudi families are interested in taking new foods regardless of their nutritional values	140	45.2	106	34.2	17	5.5	36	11.6	11	3.5	0	0.0	310	100
54	Travelling abroad has great effect on the change in the Saudi family diet	119	38.4	109	35.2	30	9.7	35	11.3	16	5.2	1	.3	310	100
55	Foreign workers inside and outside houses have great effect on bringing many kinds of foods, which are unknown to the Saudi family before	112	36.1	81	26.1	24	7.7	46	14.8	47	15.2	0	0.0	310	100
56	In spite of increased food availability, many family members, especially children, suffer malnutrition diseases.	1145	46.8	94	30.3	37	11.9	23	7.4	11	3.5	0	0.0	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		Total	
		Fr	%	Fr	%	FR	%	FR	%	FR	%	FR	%
57	Saudi family needs health and nutritional awareness	232	74.8	63	20.3	3	1.0	10	3.2	2	.6	310	100
58	Education has a positive effect on food and nutritional habits.	237	76.5	51	16.5	9	2.9	12	3.9	1	.3	310	100
59	High income has a positive effect on having healthy diet.	163	52.6	86	27.7	18	5.8	32	10.3	11	3.5	310	100
60	Saudi family looks after food shape and taste rather than of its nutritional values.	184	59.4	91	29.4	9	2.9	17	5.5	9	2.9	310	100
61	Anaemia and malnutrition diseases are considerably high in Saudi society.	97	31.3	88	28.4	69	22.3	39	12.6	17	5.5	310	100

No.	Statement	Agree		Agree somewhat		Don't Know		Disagree		Disagree Strongly		No Reply		Total	
		Fr	%	Fr	%	FR	%	FR	%	FR	%	FR	%	FR	%
62	There is a strong connection between dietary habits and many malnutrition diseases in Saudi society.	118	38.1	91	29.4	63	20.3	25	8.1	13	4.2	0	0.0	310	100
63	In term of food preparation extravagance is being practiced widely in dinner parties and social occasions.	262	84.5	35	11.3	3	1.0	6	1.9	4	1.3	0	0.0	310	100
64	It is necessary for parents to have family planning to enable them to provide best health and nutritional care for their children.	143	46.1	60	19.4	7	2.3	39	12.6	59	19.0	2	.6	310	100

APPENDIX -B-

Traditional Diet and Dietary Practices in Islam

Islam is a complete way of life in Saudi society. Many Islamic characteristics of the Saudi family however, are still intact and have not changed. Family members are tied to the Islamic teachings and values and regularly apply them to their daily life. These teachings and values are considered as important sources of direction and control the actions and behaviours of the Saudi people. Islam is the religion of Saudi Arabia and most characteristics of the Saudi family originate from it. Islam has greatly influenced the life of the Saudi Society compared to any other Islamic countries. It covers all things people do in their lifetime, including dietary habits and practices. For example, fasting month (*Ramadan*) is the fourth pillar of Islam. Fasting, means abstinence from drinking as well as eating, lasts from dawn to sunset each day for the whole month. People have to change their eating schedule from day-time to night-time. They break their fast when the sun sets. The *Fatour* (breakfast at sunset) is started by dates and Arabian coffee and some sweetened drinks. This is followed by a heavy meal which is composed of fried dishes like *Samboosa*, different kinds of foods, salads and a selection of sweets. The midnight meal is composed of *Kabsa* and some vegetables and *laban* (buttermilk). The meal which is consumed just before dawn is called *Sahour*. Some people eat a heavier meal complete with lamb meat rice and condiments so it will last the whole day of fasting. Islam encourages fasting and has made fasting during the month of *Ramadan* imperative and a religious obligation. The Prophet is reported to have said, 'Fast so that you will be more healthy.' Fasting serves to ease the constant routine of the stomach and is believed to help the Muslim to control his/her drives. Thus fasting has many spiritual and physical advantages.

In Islam, certain foods are considered to be unclean and not fit to be eaten. The Quran forbids eating of pork and blood. Perished animals because of disease or by strangulation or beating, are not fit to be eaten. Allah said in the Quran:

'Forbidden to you (for food) dead animals, and blood and flesh of swine, (which is slaughtered as a sacrifice for other than Allah or has been slaughtered for idols) and that which has been killed by strangling or by a violent blow, or by a headlong fall, or by the goring of horns - and that which has been partly eaten by a wild animal unless you are able to slaughter it (before its death) and that which is sacrificed (slaughtered) on an Nusub' (S.5. V.3).

Islam has forbidden consumption of these types of meat because they involve high risks to consumers who will be vulnerable to sickness. Islam has always made it a priority to safeguard individuals' and society's health. Therefore, the following prohibitions on diet and dietary practices within Islam are justified in relation to wellbeing of man and society:

- A- Islam prohibits consumption of dead meat except that of fish, because a dead animal may die of sickness or old age. When death results from sickness, the meat will be contaminated and consequently affect people's health.
- B- Islam prohibits consumption of the meat of strangled animal, because when a living being gets strangled oxygen does not reach its lungs and then carbon dioxide accumulates which it eventually leads to poisoning the tissues of the body and thus affects who ever consumes such meat.
- C- An animal that has been partly eaten by a wild beast and died afterwards, is considered unfit for consumption because wild animal might carry some venom in its mouth and sputum and transmit it to the body of its prey which will be detrimental to the health of whoever consumes it.
- D- Islam prohibits the consumption of swine flesh because it is prone to contamination by the tape worms which are harmful to human health as it enter human intestines. Also, swine flesh contains a high level of cholesterol that may lead to sclerosis of vessels and cardiac diseases.
- E- Alcohol consumption is forbidden, there being strict penalties for its illegal use. Allah said in the Quran: 'They ask you (Muhammad) about alcoholic drinks and gambling say in them some benefits for men, but the sins of them are greater than their benefit' (S2V.219). Islamic tenets are considered by Muslims to be scientific guidelines for physical, mental and psychological health when they are properly implemented in daily life. Islam could be thus seen as one most effective social institutions can help to promoting hygienic health awareness, and dietary habits among people if they follow and abide by the dietary traditions of the prophet as is illustrated by following Islamic dietary practices:

- A- Cleaning hands before and after eating meal decreases the risk of becoming infected with diseases.
- B- Eating food collectively with wife and children, serves to strengthen social and familial ties and adds blessing to food. The Prophet is reported to have said 'Eat together and recite the name of Allah, food will be blessed for you'.
- C- Using right hand in eating and drinking. The Prophet is reported to have said: 'No one of you should eat or drink with his left hand '; because left hand is always used to clean the special parts of the body.
- D- A Muslim must eat what is in front of oneself The Prophet said to (Umar Bin Abi Salamah): 'O boy, say the name of Allah, the Almighty and eat with your right hand and from the stuff is in front of you.' That is to say a Muslim must not run his hand in the middle of the dish or bowl, but instead eat from the edge of it. The Prophet is reported to have said 'Blessing comes down upon food in its middle, so eat from the sides of the vessel and do not eat from its centre.'
- E- Prohibition against breathing or blowing in food or drink because this may lead to its contamination. Drinks should be sipped in small doses so that the person will not need to breathe inside the pot. The Prophet has prohibited Muslims to breathe in the pot or blowing upon it.
- F- Prohibition of saying bad remarks about food. Abu hurairah (follower of Prophet Muhammed) said, 'the Prophet never found fault with any food. If he had the inclination, he would eat it and if he disliked it, he would leave it.'
- G- Sitting upright during eating. The Prophet is reported to have said, 'I do not eat while reclining.'
- H- Observing general etiquette by not watching other people while eating and not talking while the mouth is full of food, or talking about something that brings about disgust.

- I- Not sleeping immediately after having food, and encouraging walking after having dinner. Not to take water while eating but a while after having finished eating.
- J- Always cover food and drinks.
- K- Prohibition of excessive eating and drinking. Allah ordains in the Quran, 'Eat and drink but waste not by extravagance for Allah loveth not those who waste by extravagance' (S.7 V:31). The Prophet is reported to have said 'A human has never filled a container that brings harm to him than his stomach. It is sufficient for a person to have a few mouthfuls that keep him actively living. However, if he will do that in any case, then he should make a third of his stomach for food and a third for drink and a third for his respiration.' Abu Hurairah said: 'The family of the Prophet had never have enough food that satisfied them for three days until he passed away.' The Prophet did not eat until he was hungry and when he ate he stopped before his stomach was full and he used to eat whatever was available. The Prophet used to be content and grateful to Allah at all times when eating food even if it was a few dates or a drink of water. Most Prophet's family food was dates and water. Islam forbids excess of food because it causes indigestion or dyspepsia and many other ailments. The Prophet is reported to have said, 'The stomach is the domicile of sickness and prevention (diet) comes on the top of cure. Treating a patient consists of two parts: medication and diet. When they are both combined together patient will recover'.
- 12th- Islam urges Muslims to consume good balanced food. It is ordained in the Quran: 'O you who believe in the oneness of Allah. Eat of lawful things that we have provided you with and be grateful to Allah' (S.2. V. 172). Islam, encourages the believers to eat good and healthy food such as dates, figs, olives, honey and other different fruits and vegetables. Honey is a good food and medication for many diseases. Allah ordains in the Quran: 'There comes forth from their bellies, a drink of varying colour wherein is healing for men.' (S.16. V. 69). Islam encourages the followers to consume white meats as they contain vital nourishment for

human body. Also, the Prophet suggests for Muslims to take milk and considers it as a very important nutrient food for the body.

13th- Islam makes it imperative on mothers to nurse their infants naturally, because mother's milk is the ideal balance of nutrients for human baby and provides valuable antibodies to protect the child against infections. Breast-feeding helps infant's physical and mental growth. Allah the Almighty ordains: 'Mothers shall give suck to their children for two whole years, for those who desire to complete the term of suckling.' (S.2. V. 233). Complete family Health

Encyclopedia refers to breast feeding as:

'the natural method of infant feeding from birth to weaning. Human milk contains the ideal balance of nutrients for the human body and provides valuable antibodies to protect the child against infections, such as gastroenteritis. Breast-feeding also provides the mother and child with a physical closeness that strengthens the bond between them.' (1990: 206-7).

N- The Quran urges people to consume water as it stipulates: 'We made from water every living thing.' (S:21 V.30). Water is the basis of life and plays a significant role in nutrition. When the body loses a large amount (volume) of water it will get dehydrated. The processes of digestion and assimilation can not operate except in the presence of water.

Islamic lifestyles embrace numerous positive patterns promoting health and rejecting behaviour which is contradictory to health. Islamic religion calls for cleanliness of hands, place, food and drink and also, it has regulations about food and drinks. It allows only good and pure things to be taken as food and drink. Islamic religion can be therefore, considered a good factor in diffusion of dietary and health awareness among citizens. Religious leaders, in general and Imams (who lead duties and activities in the mosques) in particular can play a vital role in advocating and encouraging health and dietary awareness in society at large in their sermons. These processes would be more useful and advantageous if there were good organization and co-operation between them and the health authorities.

APPENDIX -C-

**QUESTIONNAIRE
ENGLISH VERSION**

Section A:

In this section we are going to ask you some questions about yourself and your family social, economic and educational background.

1- Sex:

- 1. Male ()
- 2. Female ()

2- Age:

- 1. Less than 30 years ()
- 2. 30 – 40 ()
- 3. 40 – 50 ()
- 4. 50 – 60 ()
- 5. 60 year and over ()

3- Place of birth:

- 1. Village ()
- 2. Bedouin area ()
- 3. City ()

4- Educational level:

- 1. Illiterate ()
- 2. No formal education ()
- 3. Elementary ()
- 4. Intermediate ()
- 5. Secondary ()
- 6. Graduate ()
- 7. Postgraduate ()

5- Marital status:

- 1. Married ()
- 2. Separated ()
- 3. Divorced ()
- 4. Widow/widower ()

6- Do you have children ?

- 1. Yes ()
- 2. No ()

7- If the answer is yes, how many children do you have?

- 1. One child ()
- 2. Two children ()
- 3. Three children ()
- 4. Four children ()
- 5. Five children ()
- 6. Six or more children ()

Please mention the actual number. ()

8- What are their ages? (Please give number)

- 1. Less than 5 years ()
- 2. 5 – 10 years ()
- 3. 10 –15 years ()
- 4. 15 – 20 years ()
- 5. Over 20 years ()

9- What are the sources of the family income?

Husband

- 1. Employment ()
- 2. Business ()
- 3. Social Security ()
- 4. Retirement ()
- 5. Other ()

If other please specify

Wife

- 1. Employment ()
- 2. Business ()
- 3. Social Security ()
- 4. Retirement ()
- 5. Other ()

If other please specify

10- Family monthly income in Saudi Riyals

- 1. Less than 3000 Riyals ()
- 2. 3000 – 6,000 ()
- 3. 6000 – 9,000 ()
- 4. 9000 – 12,000 ()
- 5. More than 12,000 Riyals ()

11- What type of house do you live in ?

- 1. Flat ()
- 2. Floor in house ()
- 3. Mud house ()
- 4. Villa ()
- 5. Palace ()
- 6. Other ()

If other please specify

12- Type of possession:

- 1. Owned ()
- 2. Rented ()
- 3. Owned by the government ()
- 4. Other ()

If other please specify

13- What is the priority in your family expenditure? (1= most ... 6= least)

- 1. Food ()
- 2. Clothing ()
- 3. Medical treatment ()
- 4. Education ()
- 5. Furniture ()
- 6. Recreation ()

14- What are the cooking appliances used by the family?

(Enumerate them according to their importance) (1= most6= least)

- 1. Electrical oven ()
- 2. Gas oven ()
- 3. Pressure cooker ()
- 4. Microwave oven ()
- 5. Various frying utensils ()
- 6. Grilles ()

15- Have you ever been outside the Kingdom?

- 1. Yes ()
- 2. No ()

16- If the answer is yes, does your traveling help in changing some of your food and dietary habits ?

- | | Kind of Food | Dietary Habits |
|--------|--------------|----------------|
| 1. Yes | () | () |
| 2. No | () | () |

17- If the answer is yes, what are the changes? (You can tick more than one)

- 1. Change in the kind of food. ()
- 2. Change in the ways of eating. ()
- 3. Change in the using new eating tools. ()
- 4. Change in the eating time. ()
- 5. Change in the cooking. ()
- 6. Other ()

If other please specify

18- Have there been any changes in your family food and dietary habits in the last 20 years ?

- | | Kind of Food | Dietary Habits |
|--------|--------------|----------------|
| 1. Yes | () | () |
| 2. No | () | () |

19- If the answer is yes, what are the changes?

- | Kind of Food | Dietary Habits |
|--------------|----------------|
| 1- | 1- |
| 2- | 2- |
| 3- | 3- |
| 4- | 4- |
| 5- | 5- |
| 6- | 6- |

Section B:

The phenomenon of foreign domestic labors living with the Saudi family becomes a reality. Questions of this section certainly will help to understand its health effects on the Saudi family.

20- Does the family employ foreign workers?

- 1- Yes ()
- 2- No ()

21- If the answer is yes, please give detail of your employees:

Type	Number	Religion	Nationality
1. Nanny			
2. Housemaid			
3. Cook			
4. Driver			

22- What are the main reasons for your family employing them ?
(Tick more than one)

- 1. Woman's work ()
- 2. Interest to continue studies ()
- 3. Lack of suitable kindergartens ()
- 4. Wish to rest ()
- 5. Poor health of wife ()
- 6. Old age of wife ()
- 7. Many household burdens ()
- 8. Many guests ()
- 9. Elderly or patient needing permanent care ()
- 10. Other ()

If other please specify.....
.....

23- Who prepares and cook food for the family?

- 1. Mother ()
- 2. Housemaid ()
- 3. Mother and Housemaid help her ()
- 4. Cook ()
- 5. A family member ()

24- In your opinion what are the advantages and disadvantages of foreign domestic labours on Saudi family?

Advantages

Disadvantages

- 1-
- 2-
- 3-
- 4-
- 5-
- 6-

- 1-
- 2-
- 3-
- 4-
- 5-
- 6-

Section C:

The purpose of this section is to explore family dietary habits, individual food preferences, family food and eating which are very important in this study.

25- To what extent do family members eat sweets?

Eating Sweets / Family Members	Everyday	Twice a week	Once a week	Rarely	Never
Father					
Mother					
Children					

26- Do family members take breakfast?

Having breakfast / Family Members	Everyday	Twice a week in the weekend	Once a week	Rarely	Never
Father					
Mother					
Children					

27- If they do not take their breakfast explain why ?

Father

1-

2-

3-

4-

5-

Mother

1-

2-

3-

4-

5-

Children

1-

2-

3-

4-

5-

28- How do family members drink milk and buttermilk?

Drinking Milk And butter-milk / Family Members	Everyday	Twice a week	Once a week	Rarely	Never
Father					
Mother					
Children					

29- Do family members drink fresh milk without boiling it ?

- 1- Always ()
- 2- Sometime ()
- 3- Rarely ()
- 4- Never ()

30- How often do family member consume fruits and fresh vegetables?

Consume fruits and Fresh Veg. / Family Members	Everyday	Twice a week	Once a week	Rarely	Never
Father					
Mother					
Children					

31- To what extend family members are keen to wash fruits and vegetables before eating ?

- 1-Always ()
- 2-Sometime ()
- 3-Rarely ()
- 4-Never ()

32- Do family members take some food between main meals ?

Eating between Main meals / Family Members	Always	Sometimes	Rarely	Never
Father				
Mother				
Children				

33- If the answer is always or sometimes, what are these foods ?

- | | | |
|--------|--------|----------|
| Father | Mother | Children |
| 1- | 1- | 1- |
| 2- | 2- | 2- |
| 3- | 3- | 3- |
| 4- | 4- | 4- |
| 5- | 5- | 5- |
| 6- | 6- | 6- |

34- There are many non-traditional foods. To what extent does the family consume them?

TYPE OF FOOD	FATHER				MOTHER				CHILDREN			
	Once a week	Twice a week	Once a month	Never	Once a week	Twice a month	Once a month	Never	Every day	Once a week	Once a month	Never
1. Hamburger												
2. French fries												
3. Sandwiches												
4. Stuffed and Fried Pies												
5. Fried chicken												
6. Donuts												
7. Cake												
8. Ice cream												
9. Other please specify												

35- What is the main method of cooking used?

Method of cooking	Everyday	Twice a week	Once a month	Never
1. Boiling				
2. Grilling				
3. Steam cooking				
4. Frying				
5. Microwave				

36- What type of oil do you use in the cooking, and how often?

Type of oil	Everyday	Twice a week	Once a month	Never
1. Vegetable oil				
2. Animal Oil				
3. Butter (Margarine)				

37- Why do you prefer this type of oil ?

	Veg. Oil -----	Animal Oil -----	Butter (Margarine) -----
1- Cholesterol is low	()	()	()
2- Tasty	()	()	()
3- Lower price	()	()	()
4- Other	()	()	()
If other please specify			

38- What is the main meal in your diet? (Tick one only)

- 1. Breakfast ()
- 2. Lunch ()

3. Dinner

()

39- What do your family main meals consist of ?

Meal	Elements
1. Breakfast	
2. Lunch	
3. Dinner	

40- How often does your family consume the following?

Type of food	Everyday	Twice a week	Once a month	Never
1. Rice				
2. Margoug				
3. Gursan				
4. Henainy				
5. Ground wheat (Jareesh)				
6. Marasea				
7. Arikah				
8. Asidah				
9. Harisah				
10. Macaroni				
11. Sayadiyah				
12. Chicken				
13. Fish				
14. Red meat				
15. Tabbouleh				
16. Makhameer				
17. White cheese				
18. Cream cheese				
19. Canned (cooked) cheese				
20. Canned(uncooked) cheese				
21. Eggs				
22. Pastries				
23. Arabian confectionery				
24. Non-Native confectionery				
25. Fresh fruits				
26. Dried fruits				
27. Fresh vegetables				
28. Canned vegetables				
29. Yogurt				
30. Dates				
31. Cream				
32. Honey				
33. Jam				
34. Nuts				
35. Biscuits				
36. Olives				
37. Broad beans				
38. Beans				
39. Lentils				
40. White bread				
41. Dark bread				
42. Motabbag				

41- How does your family consume the following drinks?

Type of drink	Everyday	Twice a week	Once a month	Never
1. Low fat milk and buttermilk				
2. Full fat milk				
3. Arabian coffee				
4. Foreign coffee without milk or sugar				
5. Foreign coffee with sugar				
6. Foreign coffee with milk				
7. Tea with sugar				
8. Tea without sugar				
9. Fresh juice				
10. Canned juice				
11. Shani				
12. Pepsi or Coca Cola				
13. Diet Pepsi				
14. Merinda or Oragina				
15. Seven Up or Teem				
16. Mint				
17. Ginger				
18. Herbal tea (cumin, etc.)				
19. Other please specify				

42- Does pregnant or breast feeding mother follow a specific diet?

- 1. Yes ()
- 2. No ()

43- If the answer is yes, enumerate the following items to show their importance. (1= Most 8= Least)

- 1. Vegetables ()
- 2. Fruits ()
- 3. Popular dishes ()
- 4. Foreign dishes ()
- 5. Sweets ()
- 6. Pastries ()
- 7. Milk ()
- 8. Soft drinks ()

44- Please if you have children which type of feeding do you use?

- 1. Bottle feeding ()
- 2. Breast feeding ()

3. Mixed feeding ()
- 45- If bottle feeding is used, how often do you sterilize the bottle?
1. Every time ()
 2. Everyday ()
 3. Never ()
- 46- What type of meals do most of your children take?
1. Special meals ()
 2. Family meals ()
 3. Ready-made meals ()
- 47- If special meals are prepared for children, who usually prepare them?
1. Mother ()
 2. Housemaid ()
 3. A family member ()
 4. Not applicable ()
- 48- If prepared by housemaid, does she prepare it under the mother's supervision?
1. Yes ()
 2. No ()
 3. Not applicable ()
- 49- Do you follow certain times for feeding your child?
1. Yes ()
 2. No ()

Section D:

This section will be dealing with your opinion about the hygiene of restaurants which you used to go. Your opinion will be of great use/value.

- 50- Do family members go to restaurants?
1. Yes ()
 2. No ()

51- If the answer is yes, how often do they go ?

Going to restaurants / Family Members	Twice a week	Once a week	Once a month	Never
Parents				
Children only				
All family members				

52- If the family goes regularly to restaurants what type of food do they usually order?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

53- Do family members have specific comments about unhealthy conditions of some fast food restaurants?

1. Yes ()
2. No ()

54- If the answer is yes, what are these comments? (enumerate them according to their importance. (you can tick more than one)

1. Not sufficiently clean ()
 2. Low nutritional value of served foods ()
 3. Some served foods are stale ()
 4. Some served foods which do not meet family members' wishes ()
 5. Seating places do not meet Saudi family traditions ()
 6. Health conditions are not met in restaurants in terms of ventilation and narrow seating places ()
 7. Other ()
- If other please specify
-

55- Where do family members prefer to eat?

1. Fast food restaurants ()
2. Other restaurants ()

56- Who prefer restaurant food?

- 1. Father ()
- 2. Mother ()
- 3. Children ()
- 4. All family members ()

57- What is your opinion about control and supervision of restaurants and groceries by health authorities ? (Tick one)

- | | Restaurant | Groceries |
|------------------------------|------------|-----------|
| 1. Sufficient control | () | () |
| 2. Fairly sufficient control | () | () |
| 3. Insufficient control | () | () |
| 4. No control | () | () |
| 5. Do not know | () | () |

58- If insufficient control, what are your suggestions to improve and control restaurants and groceries?

- | Restaurants | Groceries |
|-------------|-----------|
| 1. | 1. |
| 2. | 2. |
| 3. | 3. |
| 4. | 4. |
| 5. | 5. |
| 6. | 6. |
| 7. | 7. |

59- Do you think food poison cases increase especially during summer?

- 1. Yes ()
- 2. No ()
- 3. Do not know ()

60- If the answer is yes, in your opinion what are the causes of food poisoning? (Tick more than one)

- 1. Use of expired foods ()
 - 2. Lack of health conditions in storage of foods ()
 - 3. Lack of cleanliness in preparation and cooking of foods ()
 - 4. Lack of cleanliness in restaurant workers. ()
 - 5. Low awareness among restaurant workers of the importance of healthy conditions and cleanliness of food preparation and serving ()
 - 6. Poor or lack of control on restaurants and groceries by health authorities. ()
 - 7. Other ()
- If other please mention

.....

61- How often do family members go to dinner invitations?

Going to Dinner Invitations / Family Members	Twice a week	Once a week	Once a month	Never
Father				
Mother				
All family members				

62- Parties, feasts and festivals in the Saudi society feature many elements (choose more than one suitable answer as you see them)

1. Diversified and extravagant types of food ()
2. Focusing on carbohydrates and fatty foods ()
3. Many sweets and confectionery ()
4. Use of canned juice rather than fresh juice ()
5. Use of soft drinks ()
6. No attention to serve healthy food ()
7. Taking dinner late at night ()
8. Use of restaurants and hotels to prepare and serve meals ()
9. Imitative, extravagance superficiality ()
10. Psychological, physical and financial burdens to the hosts. ()

Section E:

Questions of this section will help to give a good idea about your family's health and hygiene, in particular and Saudi family in general.

63- Do you ask your children to wash their hands before and after meals ?

- | | Before meals | After meals |
|--------|--------------|-------------|
| 1. Yes | () | () |
| 2. No | () | () |

64- Do you get your children use to brushing their teeth daily?

1. Yes ()
2. No ()

65- How many times do you brush your teeth daily?

1. Once ()
2. Twice ()
3. Three times ()
4. Never ()

- 66- Do family members drink from the same vessel during meals?
- 1. Yes ()
 - 2. No ()

- 67- What is healthy food in your opinion?
- 1.
 - 2.
 - 3.
 - 4.
 - 5.
 - 6.
 - 7.

- 68- Do you think changes in the Saudi family diet cause many diseases?
- 1. Yes ()
 - 2. No ()
 - 3. Don't know ()

- 69- If the answer is yes, what are the unhealthy results from dietary habits in you opinion? (Tick one or more)
- 1. Increase of obesity among children and adults ()
 - 2. Increase of diabetes mellitus ()
 - 3. Increase of cardiac and cardiovascular diseases ()
 - 4. High blood cholesterol ()
 - 5. Anaemia ()
 - 6. Increase of malnutrition diseases ()
 - 7. Hypertension or hypotension ()
 - 8. Increase of tooth decay ()
 - 9. Increase of gastroenterological diseases ()
 - 10. Other ()

If other please specify

.....

- 70- Does any person in your family suffer from any disease?
- 1. Yes ()
 - 2. No ()

- 71- If the answer is yes, what type of disease?
- 1. Diabetes Mellitus ()
 - 2. Hypertension ()
 - 3. Gastric Ulcer ()
 - 4. Gall Stones ()

- 5. Kidney Failure ()
 - 6. Anaemia ()
 - 7. Heart Diseases ()
 - 8. Malnutrition ()
 - 9. Osteoporosis ()
 - 10. Asthma ()
 - 11. Rubella ()
 - 12. High Blood Cholesterol ()
 - 13. Other ()
- If other please specify

72- To what extent do you believe that dietary habits and food consumption of the Saudi family are proximate to balanced diet?

- 1. Greatly ()
- 2. Not so greatly ()
- 3. Far from ideal ()
- 4. Mostly harmful to health ()
- 5. Do not know ()

73- In your opinion what are unhealthy by products of change in the Saudi dietary habits?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

74- In your opinion, what are the most important suggestions to change unhealthy dietary habits of the Saudi family?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

75- In your opinion, what are the changes that took place in the Saudi family as a result of socio-economic changes witnessed by the Saudi society? (Tick more than one)

- 1. Executive luxury in acquiring many appliances and various types of cars. ()
- 2. Recruitment of foreign workers such as housemaids drivers, and nannies, to carry out most of the duties of the family. ()
- 3. Frequent travel abroad during holidays and vacations

- of the family. ()
- 4. Husbands travel alone abroad during vacations. ()
- 5. Many nutritional habits have changed. ()
- 6. Extravagant in food and drinks in feasts, festivals and parties. ()
- 7. More leisure time for the family. ()
- 8. Increase of divorce cases. ()
- 9. Interest to acquire higher education by boys and girls. ()
- 10. Increase of family income. ()
- 11. Weak familial relations. ()
- 12. Available communications connect family members with each other. ()
- 13. Women's participation in various activities outside the scope of the family. ()
- 14. Consumption role exceeds productive role of the Saudi family. ()

76- Do you read expiration date of canned food ?

- 1- Always ()
- 2- Sometimes ()
- 3- Rarely ()
- 4- Never ()

77- What do you first look for on the food product when you buy it?
(Enumerate the following to show their importance)

- 1- Country of production ()
 - 2- Way of packing ()
 - 3- Ingredient ()
 - 4- Instructions of use ()
 - 5- Outer appearance ()
 - 6- Relation to a certain advertisement ()
 - 7- Date of expiration ()
 - 8- Price ()
 - 9- Other ()
- If other please specify
-

78- How much do you know about Islamic teachings on dietary habits?

- 1. A great amount ()
- 2. Some ()
- 3. Little ()

79- To what extent do you apply them in your daily life?

- 1. Always ()
- 2. Sometimes ()

- 3. Rarely ()
- 4. Never ()

Section F:

Mass media and educational institutions could play major role in promoting health knowledge and awareness. Your assessment in the following questions would be of great importance.

80- How often do family members watch food and drinks TV advertisements?

Watch food and Drinks T.V. Ads. / Family Members	Always	Sometimes	Rarely	Never	Not applicable
Father					
Mother					
Children					

81- If the answer is always or sometimes, what effects do you think of these advertisements on the health of family members?

Advertisements Effects / Family Members	Very Useful	Fairly useful	Not useful	Harmful	Do not know
Father					
Mother					
Children					

82- If the answer is not useful or harmful, in your opinion what is the best way to avoid their negative effect? (Tick more than one)

- 1. Be subjected to control to exclude harmful advertisements especially to children. ()
 - 2. Show time should be controlled so that children will not see them. ()
 - 3. A TV Specialist Committee is formed to judge prior to its presentation. ()
 - 4. Seek medical consultation and approval of advertisements. ()
 - 5. Other. ()
- If other please specify

83- If the answer is very useful or fairly useful, state the useful aspect: (Tick more than one)

- 1. Help to identify benefits of some types of foods. ()
 - 2. Help to identify some good food products. ()
 - 3. Help to identify companies producing new foods. ()
 - 4. They are enjoyable and exciting to children. ()
 - 5. Other ()
- If other please specify

84- What attract your attention most in TV advertisements?

1. Way of presentation, excitement and photographing. ()
 2. Focusing on the positive aspects of food products only. ()
 3. Attention to outer appearance such as clothes, make up and hair style by the person presenting the commercial. ()
 4. Beauty of face and body. ()
 5. Movements and gestures of commercial presenters. ()
 6. Other. ()
- If other please specify
-

- 85- How often do you watch TV health programmes ?
1. Always ()
 2. Sometimes ()
 3. Rarely ()
 4. Never ()

- 86- If the answer is always or sometimes, do you follow the advice and apply it in your daily life?
1. Always ()
 2. Sometimes ()
 3. Rarely ()
 4. Never ()

- 87- If the answer is always or sometimes, how do you evaluate these programmes presented by Saudi TV for you and your family's health ?
1. Very useful ()
 2. Fairly useful ()
 3. Not useful ()
 4. Do not know ()

- 88- How often do you listen to health programmes on Radio?
1. Always ()
 2. Sometimes ()
 3. Rarely ()
 4. Never ()

- 89- If the answer is always or sometimes, how often do you follow the advice and apply it in your daily life?
1. Always ()
 2. Sometimes ()
 3. Rarely ()
 4. Never ()

- 90- How do you evaluate health programmes presented by Saudi radio?
1. Very useful ()
 2. Fairly useful ()
 3. Not useful ()
 4. Do not know. ()

- 91- How often do you read newspapers and magazines?
1. Always ()
 2. Sometimes ()
 3. Rarely ()
 4. Never ()
- 92- If the answer is always or sometimes, how do you evaluate medical articles in newspapers and magazines?
1. Very useful ()
 2. Fairly useful ()
 3. Not useful ()
 4. Do not know ()
- 93- How often do you read books on general medical subjects?
1. Always ()
 2. Sometimes ()
 3. Rarely ()
 4. Never ()
- 94- If the answer is always or sometimes, how do you apply health information in your daily life?
1. Always ()
 2. Sometimes ()
 3. Rarely ()
 4. Never ()
- 95- Do you buy simple health books for your children, which they can understand easily ?
1. Always ()
 2. Sometimes ()
 3. Rarely ()
 4. Never ()
- 96- From which source does your family obtain most health and dietary information? (Arrange the following according to their importance) (1= most 6 = least)
1. Radio ()
 2. Saudi TV. ()
 3. Satellite Channels ()
 4. Newspapers and Magazines ()
 5. Medical books ()
 6. Male or female doctor ()
 7. Relatives and friends ()
 8. Medical booklets and pamphlets ()

- 9. Cooking books ()
- 10. Personal experience ()

97- Have you received any health booklets or pamphlets from health centre in the last five years?

- 1. Yes ()
- 2. No ()

98- If the answer is yes, how much benefit did your family get from these booklets or pamphlets?

- 1. Very useful ()
- 2. Fairly useful ()
- 3. Not useful ()

99- How adequate is the role of health authorities in making people aware of their health and dietary habits ?

- 1. Very adequate ()
- 2. Adequate ()
- 3. Inadequate ()
- 4. Do not know ()

100- If the answer is inadequate, what are the aspects of the inadequacy? (Enumerate the following according to their importance to you)

- 1- Health authorities are not keen in making people aware of their health problems and what are the method of prevention or sharing in finding solutions. ()
- 2- Little attention is given to preventive medicine while concentrating on therapeutic medicine. ()
- 3- Ministry of Information officials give little attention to make people aware of health and nutritional problems in the society and diseases resulting from malnutrition. ()
- 4- Schools and other social institutions lack interest in directing and monitoring healthy behaviour of students. ()
- 5- Other ()
If other please specify.....
.....

101- If the answer is very adequate , what are their health promoting programmes?

- 1. Sending medical and nutritional booklets and pamphlets and encourage people to follow their advices. ()
- 2. Give lectures and hold symposia on health and dietary awareness and encourage people to participate in solving health and nutritional problems in their society. ()
- 3. Mosque orators should make people aware of the importance of ()

sound health behaviour and avoid unhealthy habits.

4. Increasing the attention of hospitals and health centres to health and nutritional awareness of patients. ()

5. More attention for health and dietary awareness by information authorities through increasing the number of health programmes in the radio, TV and medical articles in newspapers and magazines. ()

102- In your opinion, do education systems care for health and nutritional awareness of students at various levels?

Yes ()

No ()

103- If the answer is no, what are your suggestions to improve health and nutritional awareness in the educational system?

1.

2.

3.

4.

5.

6.

7.

104- How adequate is the role of school in promoting health and dietary awareness for students ?

1. Very adequate ()

2. Adequate ()

3. Inadequate ()

4. Do not know ()

105- If the answer is inadequate what are the aspects of the inadequacy? (enumerate the following according to their importance)

1. Lack of attention to educate students on adopting sound nutritional habits and to keep the environment clean. ()

2. No time is allocated for health education which should be include in the educational subjects. ()

3. The scholastic day does not include education on healthy nutrition. ()

4. Students are not encouraged to participate in health activities. ()

5. Health inspectors are not invited to schools to educate students on health and nutritional problems in the society and encourage them to solve such problems. ()

- 106- If the answer is very adequate, what are the most important educational and practical activities?
(Enumerate the following according to their importance)
1. Distributing of health booklets and pamphlets to students. ()
 2. Giving lectures and holding symposia on health and nutritional awareness. ()
 3. Carrying out practical health activities to train students to participate in health and nutritional awareness programmes. ()
 4. Inviting health inspectors to visit schools to direct students' behaviour. ()

- 107- What are the most effective means in your opinion of improving dietary and health awareness in Saudi society?
(Please nominate the following according to their importance)
1. Increasing health and dietary awareness programmes in radio and TV. ()
 2. Paying more attention to health and dietary awareness in education systems as consistent with students abilities at various levels. ()
 3. The school should play a positive role in directing and monitoring students and guiding them to the sound health behaviour in family, school and surrounding environment. ()
 4. Giving lectures and hold symposia on health and nutritional problems in the society and inviting parents attend these activities. ()
 5. Distributing health booklets and pamphlets to increase health and nutritional awareness in the society. ()
 6. Sending health visitors to families to give health advices. ()
 7. Hospitals and health centers should pay more attention to preventive medicine and make people aware of health and nutritional problems. ()
 8. Propagate sound health behaviour through religious lectures and symposia in mosques. ()
 9. Hold educational health, nutritional and environmental courses as consistent with the requirements and problems of the Saudi family. ()
 10. Other ()

If other please specify

.....

Section G:

The purpose of this section is to obtain your opinion about health and dietary habits and practices in your family in particular, and in Saudi family in general.

Respondents' health attitudes:

(Please choose one out of the following five answers)

No.	Statement	Agree	Agree some-what	I don't know	Disagree	Disagree Strongly
1	It is not necessary to wash fruits & vegetables before eating .					
2	Cutting vegetables to pieces before washing is a recommended hygienic habit.					
3	Eating fresh vegetables & fruits doesn't help human health.					
4	I don't think human health will be affected by not drinking milk.					
5	I don't think it is harmful to health if a person drinks fresh milk directly without boiling it.					
6	It is necessary to read expiry date on canned food before buying it.					
7	Breakfast is not necessary.					
8	The habit of using same vessel for drinking by all family members is apart of the family's customs and traditions and should not be abandoned whatever are the reasons.					

No.	Statement	Agree	Agree some- what	I don't know	Disagree	Disagree Strongly
9	It is not necessary to wash hands before and after eating.					
10	It is not necessary for the person to clean his teeth with tooth brush and paste morning and evening.					
11	Taking sweets and candies after main meal helps digestion.					
12	Using butter in preparing candies and other kinds of food boosts their nutritional value.					
13	Adding various coloring materials do not affect the nutritional value of food.					
14	Drinking grapefruit juice in the morning helps loosing weight.					
15	Drinking tea after main meals helps digestion.					
16	Gum chewing in the morning is useful for health.					
17	Spices and chilly pepper protect us against cold diseases.					
18	Bottle-feeding does not vary from breast-feeding as a healthy method to feed babies.					
19	Mother should keep away as far as possible from bottle-feeding of her baby.					
20	Organizing child's food time must be observed.					

No.	Statement	Agree	Agree some- what	I don't know	Disagree	Disagree Strongly
21	It is not necessary to prepare special meal for children to meet their nutritional needs.					
22	Family's main meal time must be observed.					
23	Using microwave in cooking does not affect health.					
24	Modern cooking appliances help woman save time and effort.					
25	Modern cooking appliances help obtaining widely diversified dishes and drinks.					
26	Eating and drinking vessels used by a patient must be separated from those of the family, if the disease is contagious.					
27	It is not necessary to prepare special food for family member patient to meet his health needs.					
28	It is not necessary to prepare for family elderly member special food that meet his health needs.					
29	Foreign housemaids and drivers living with family without genuine health check-up cause health and hygienic risk.					

No.	Statement	Agree	Agree some- what	I don't know	Disagree	Disagree Strongly
30	Housemaid or driver must pass medical check-up before they can join the family in order to make sure they are free of any diseases. Medical certificate issued by health authorities in their country shouldn't be trusted.					
31	Mass media help improving hygienic and nutritional awareness of the family members.					
32	Health programmes on Saudi Radio and Television need improvement .					
33	Television food advertisements concentrate on unhealthy foodstuff, as being aiming at financial gain only.					
34	Television food advertisements have unhealthy effects on family's food, especially children.					
35	Food advertisements must be monitored and properly directed in order to bring about the very good public health for the individual, family and society.					
36	Health and nutritional articles published by newspapers and magazines need improvement .					
37	Educational curricula in various educational levels suffers from insufficiency of health and nutritional enlightenment for both male and female students.					

No.	Statement	Agree	Agree some- what	I don't know	Disagree	Disagree Strongly
38	Health and nutritional awareness shall be further stressed in educational curricula in a more comprehensive way that meets student capabilities in various study levels.					
39	Public health and nutritional enlightenment efforts made by official agencies is insufficient.					
40	Health and nutritional enlightenment must take priority in health programmes.					
41	Fast food restaurants widespread help the increase consumption of Saudi families of frozen, canned and fried food which have bad effect on health.					
42	Widespread of frozen and canned food encourages family to consume them more than natural and fresh food.					
43	Inadequate supervision over restaurants by Government Officials is responsible for the increase in food poisoning incidents.					
44	Mother is the one who selects kinds of food in family meals.					
45	Mother and father select kinds of food in family meals.					

No.	Statement	Agree	Agree some- what	I don't know	Disagree	Disagree Strongly
46	Mother selects kinds of food, which father and children prefer.					
47	There is a big change in family diet from past to present time.					
48	Family's diet in the past was more healthy than it is today.					
49	Nowadays families consume starches, fats and sweets in food more than fresh fruits and vegetables.					
50	Families consume beverages more than fresh juices and milk.					
51	The diet of Saudi families is one factor which may cause some diseases like diabetes, hypertension, heart diseases and arteriosclerosis ,etc.					
52	Customs and traditions have a major influence on family diet.					
53	Saudi families are interested in taking new foods regardless of their nutritional values.					
54	Travelling abroad has great effect on the change in the Saudi family diet.					

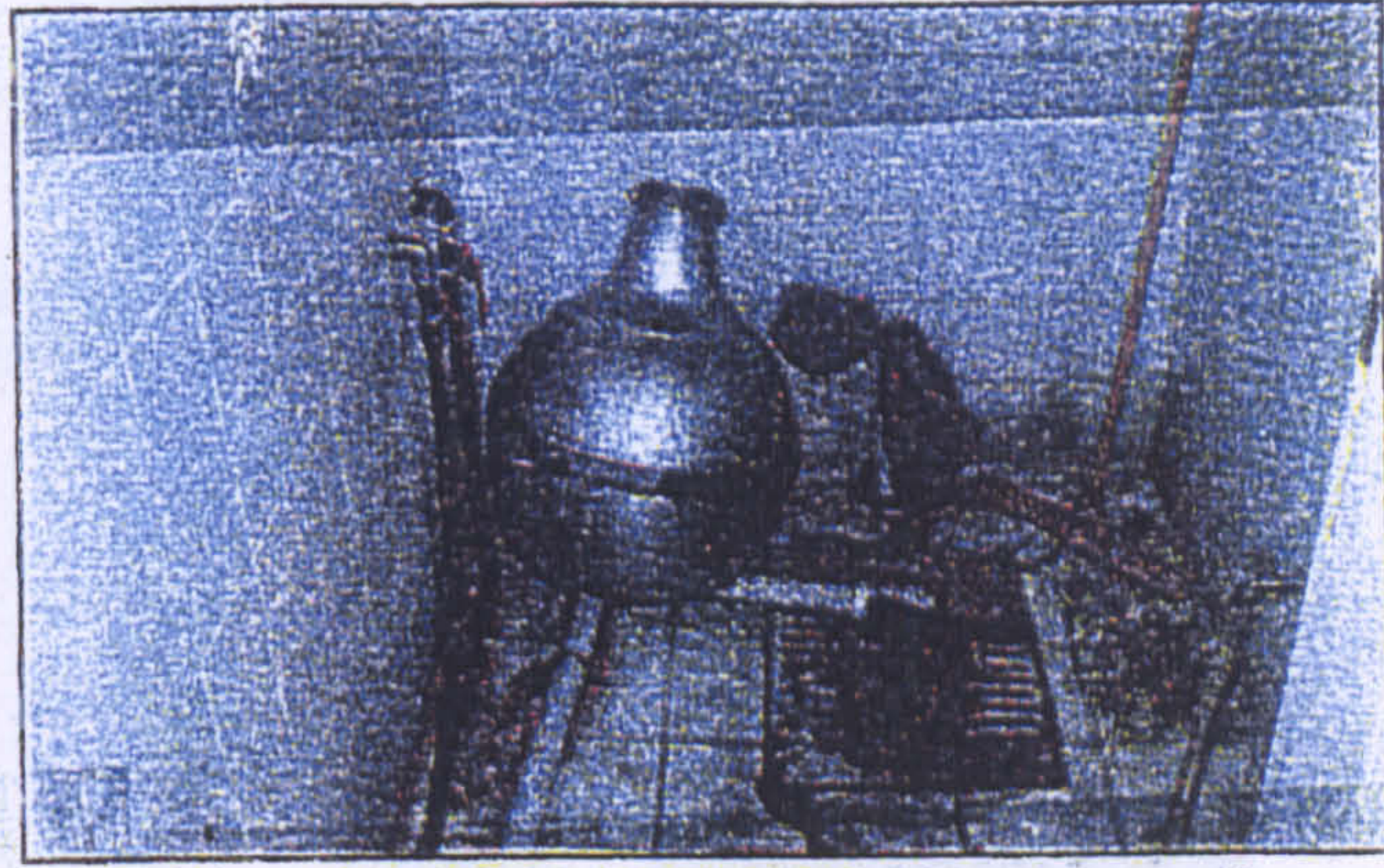
No.	Statement	Agree	Agree some- what	I don't know	Disagree	Disagree Strongly
55	Foreign workers inside and outside houses have great effect on bringing many kinds of foods, which are unknown to the Saudi family before.					
56	In spite of increased food availability, many family members, specially children, suffer malnutrition diseases.					
57	Saudi family needs health and nutritional awareness.					
58	Education has a positive effect on food and nutritional habits.					
59	High income has a positive effect on having healthy diet.					
60	Saudi family looks after food shape and taste rather than of its nutritional values.					
61	Anemia and malnutrition diseases are considerably high in Saudi society.					
62	There is a strong connection between dietary habits and many malnutrition diseases in Saudi society.					
63	In term of food preparation, extravagance is being practiced widely in dinner parties and social occasions.					
64	It is necessary for parents to have family planning to enable them to provide best health and nutritional care for their children.					

IF YOU HAVE ANY COMMENTS OR SUGGESTIONS WOULD YOU KINDLY WRITE THEM DOWN.

APPENDIX -D-

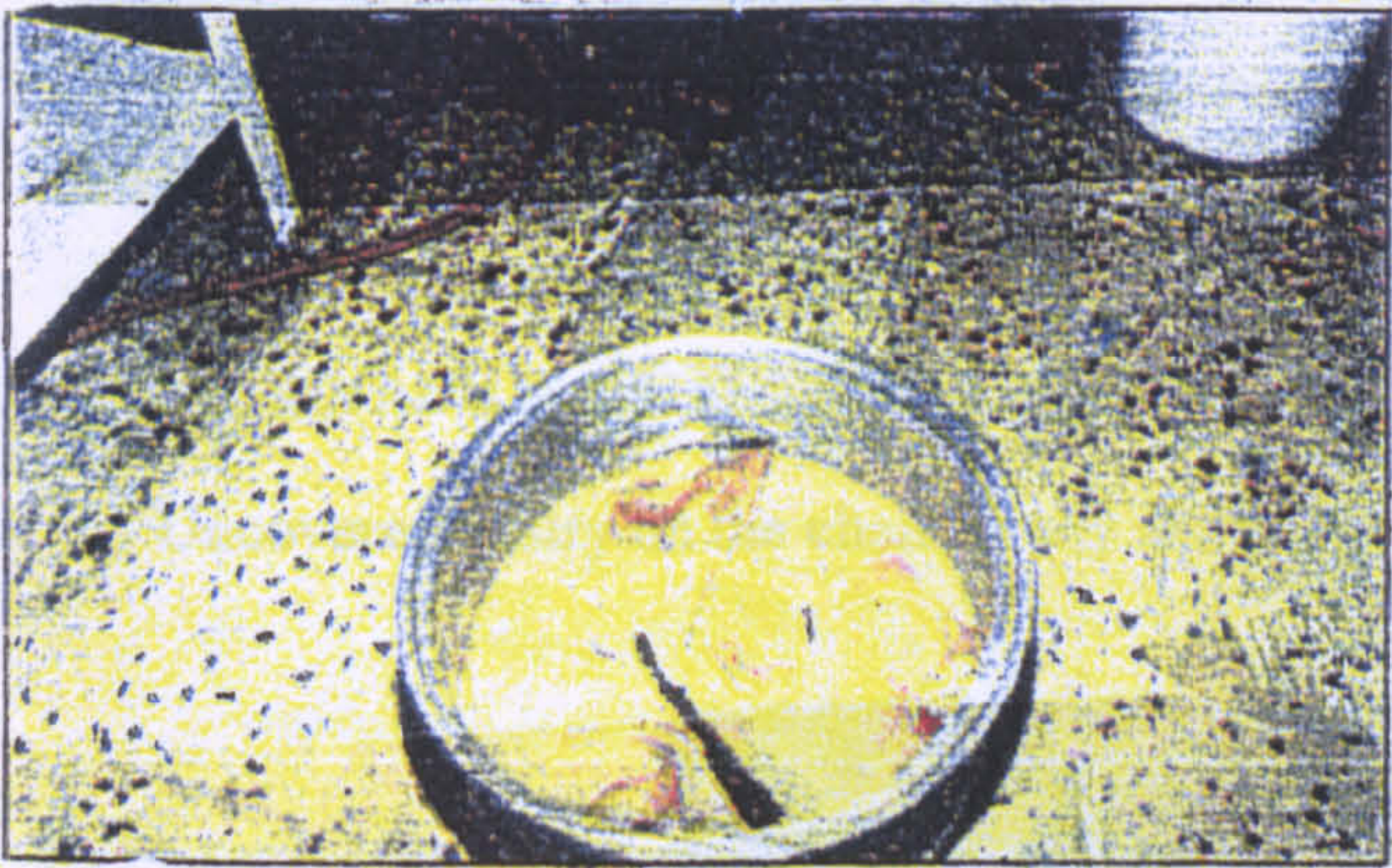


جرة الفول قرب الفتحة الباقية من المراض الملغى.



وهنا جرة فول تجاور المراض

(AL RIYADH - No. 11152 Tuesday - 5/1/1999 : 10)
Foul (Chilli beans) jar is found in a disused toilet »



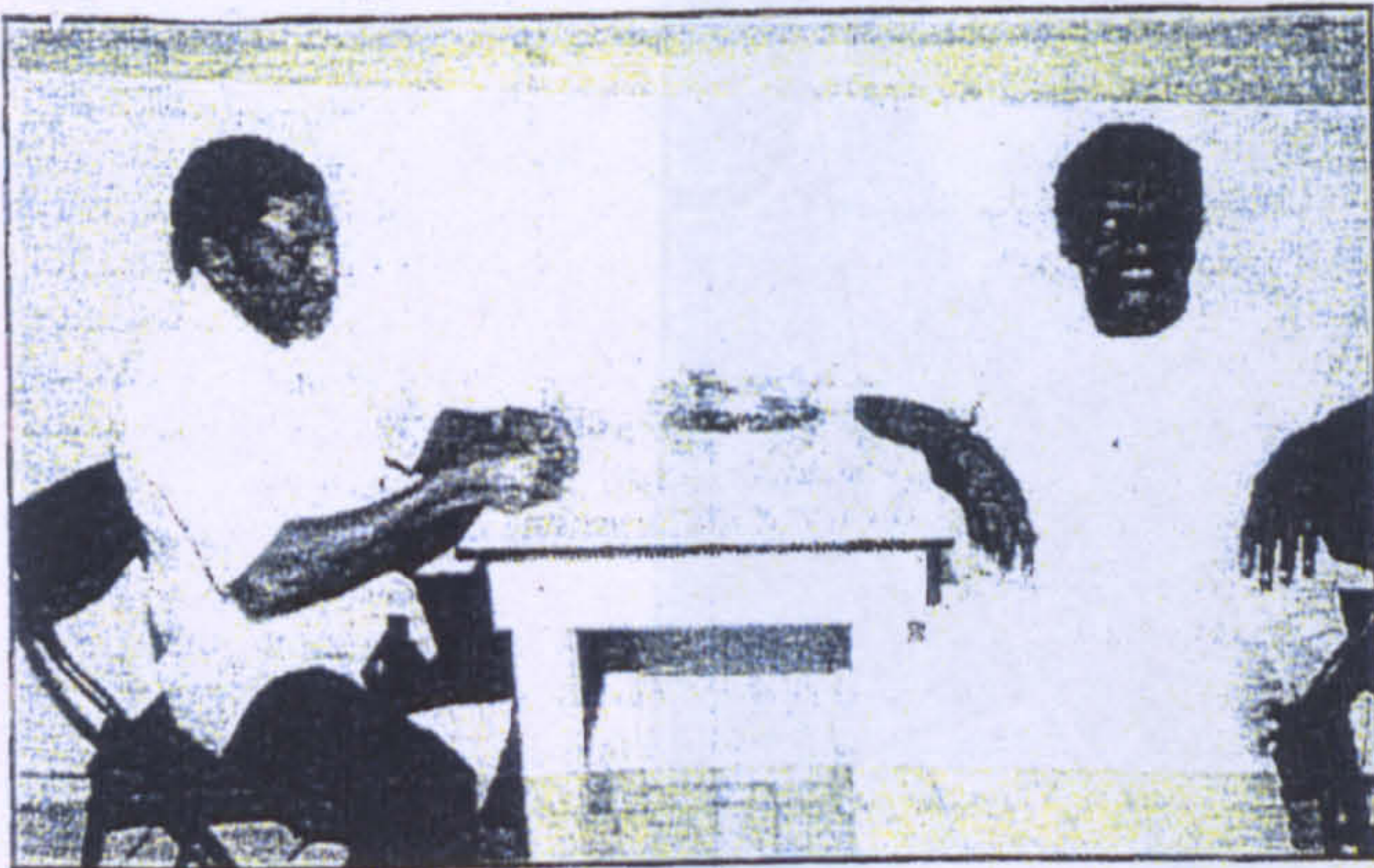
كمونية بالخشب

Ibid
Uncovered Kammoniah's pot with a small piece of wood »



الواني دون اغطية «القلابة والشوربة»

Ibid
Uncovered foul and soup's pots »



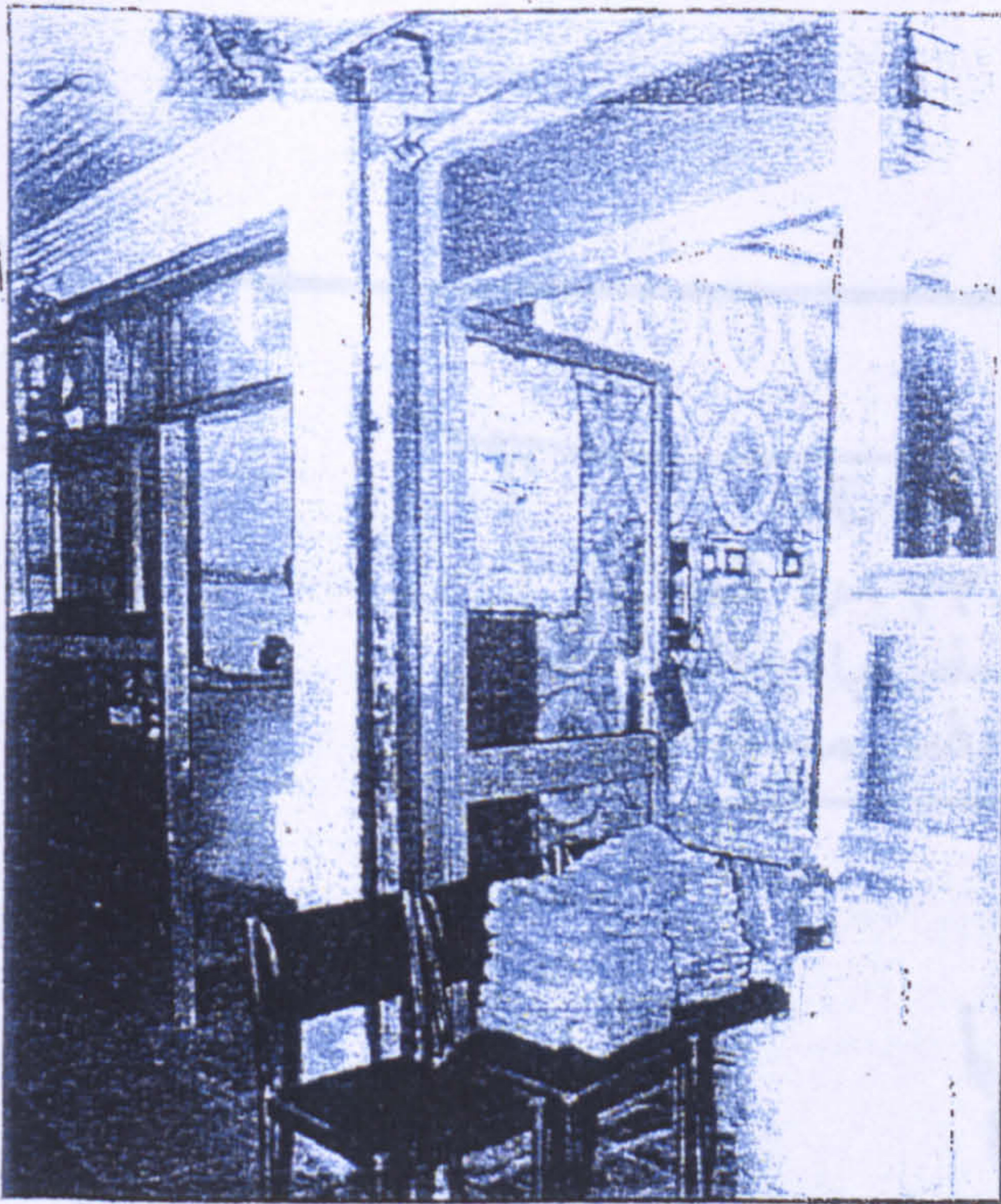
جلسة (لف) سمبوسة!!

Ibid
Restaurant's foreign workers preparing samboosa without gloves »



جانب من عمليات الإعداد للسمبوسة

Ibid



العجينة في الهواء الطلق جاهزة للبيع

[AL RIYADH No.11141 - Friday-25/2/1998:4]

Uncovered pastry on the chairs ready for sale ◦

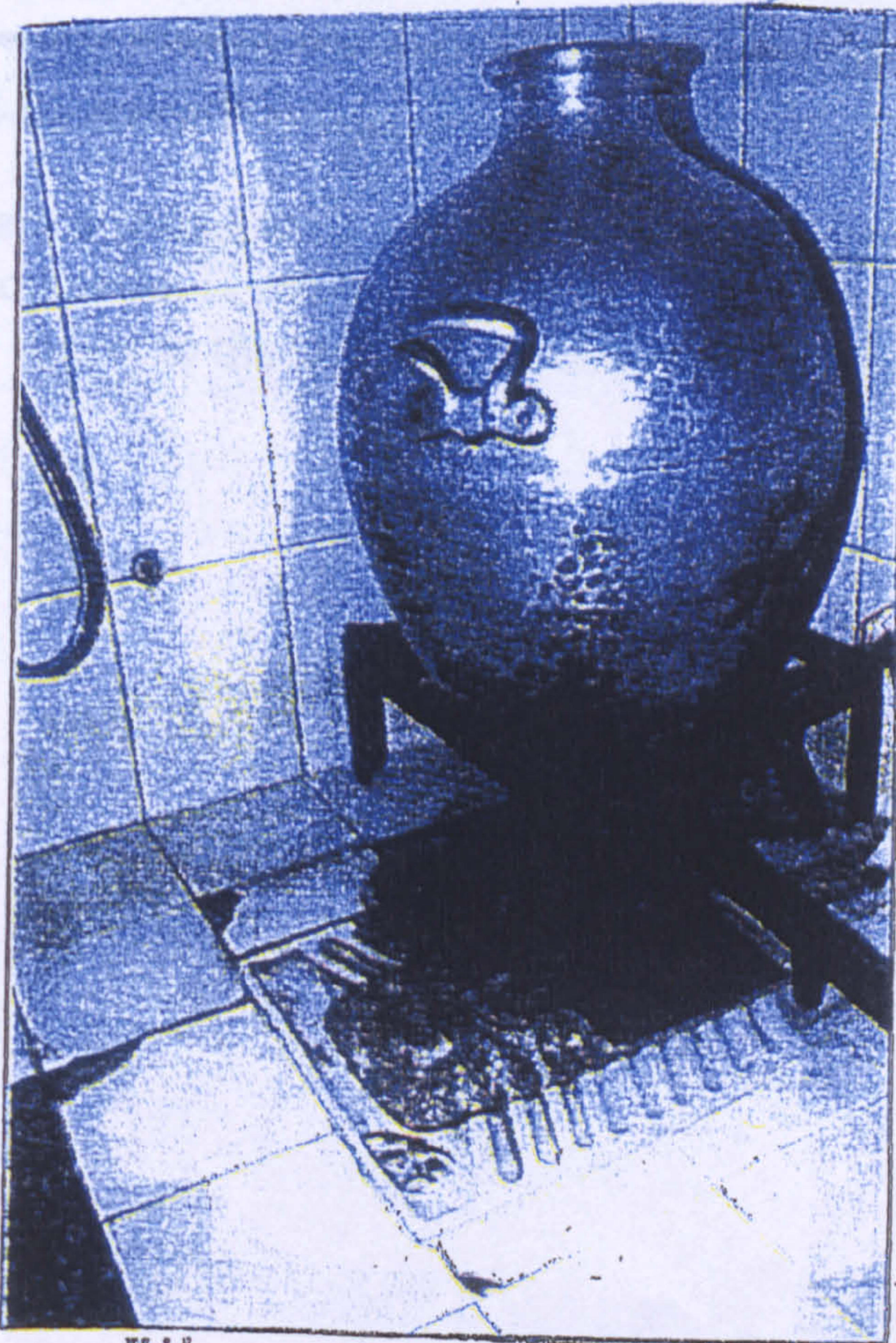


احد مطابخ الدوكييات

Ibid

One of the unclean and unorganized fast food restaurant kitchen ◦

- 6 -



Ibid

جرة الفول لابق المراحيض

Another situation where the foul's jar is placed over the disused toilet



(Al-Jazeera Newspaper.- No. 9047, Sunday 6/7/1997: 9)

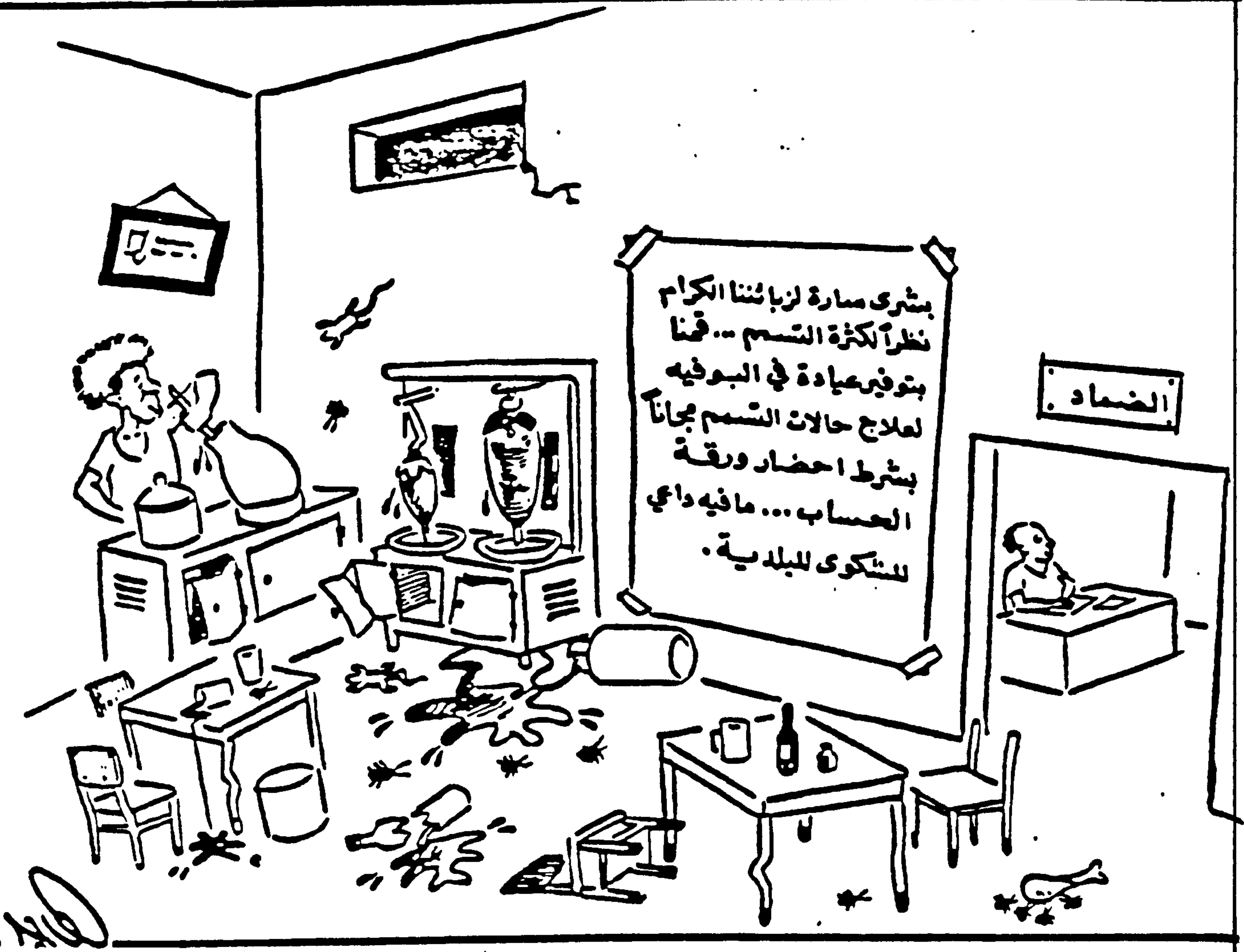
Shawarma restaurant's advertisement to the customers which says:
We have good news: If you have 33 cases of food poisoning you will get a free ticket to the U.S.A. for treatment in the best hospital.



(Al-Jazeera Newspaper No. 9048, Monday 7/7/1997: 1)

Abu-Khalil Fast Food Restaurant's advertisement says:

Welcome you, Please notice that: all complaints must be sent immediately to Shommaisi hospital.



(Al-Jazeera Newspaper No. 9521, Friday 23/10/1998: 9)

A sign for restaurant customers: good news for our dear customers. Due to the high incidents of food poisoning. We have opened a medical clinic in our restaurant for free treatment of food poisoning. No need to complain to the municipality.



(Al-Jazeera Newspaper No. 9083, Monday 11/8/1997: 13)

This caricature says: A restaurant customer is complaining to health inspector, saying, I found this shoe in the foul dish. In the next restaurant: Health inspector replies: mine is worst than yours, I found a boot in a restaurant dish.



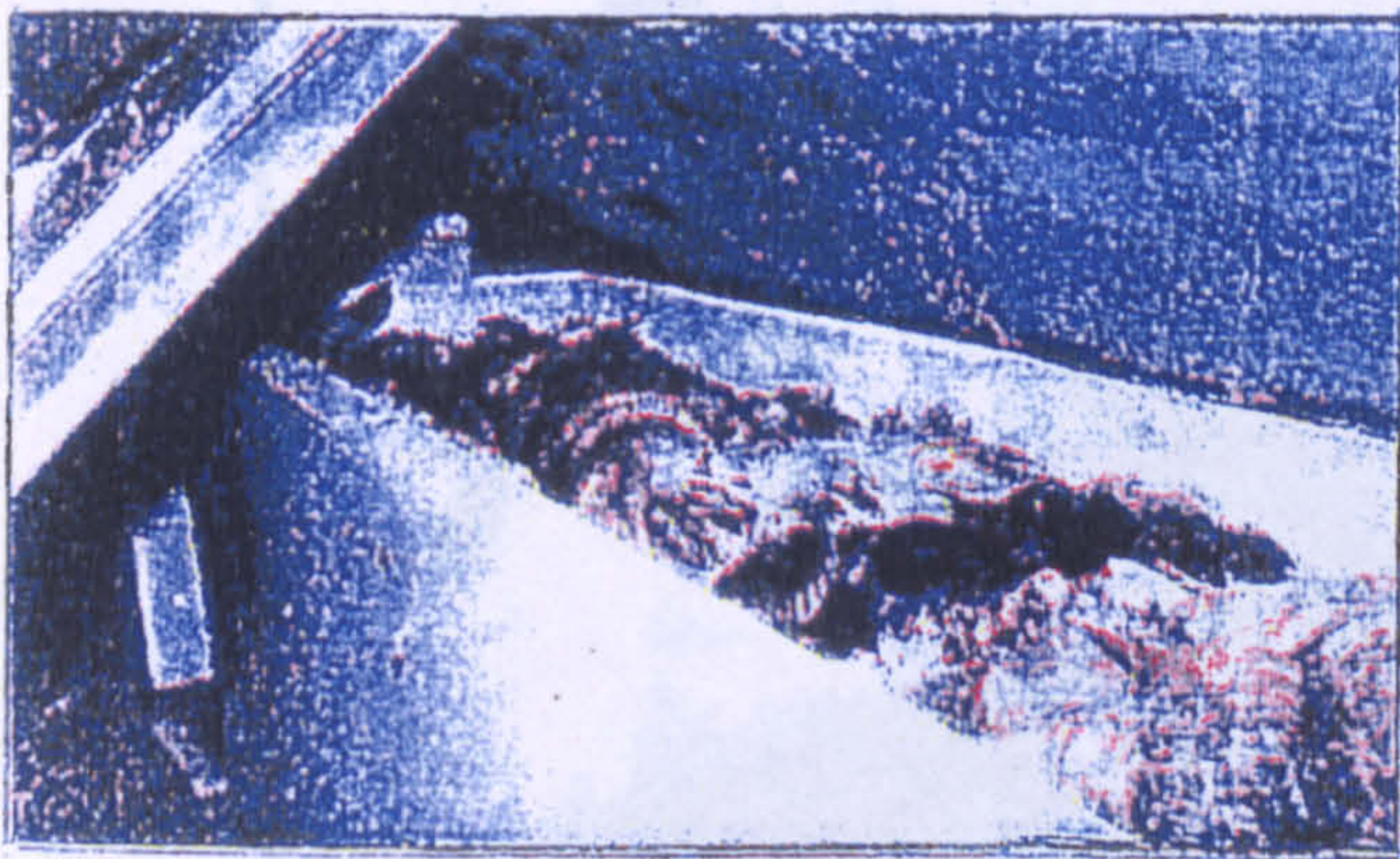
(Al-Jazeera Newspaper No. 9505, Wednesday 7/10/1998: 13)

- 1- The conversation between two geckos that seem to be happy. One says to the other: My dear gecko I want to you go quickly to the municipality and give them this letter of thanks.
- 2- The unclean and untidy restaurant kitchen, where the owner has put a note on the kitchen door. "No admission except staff".



(Al-Jazeera Newspaper No. 9085, 13/08/1997:32)

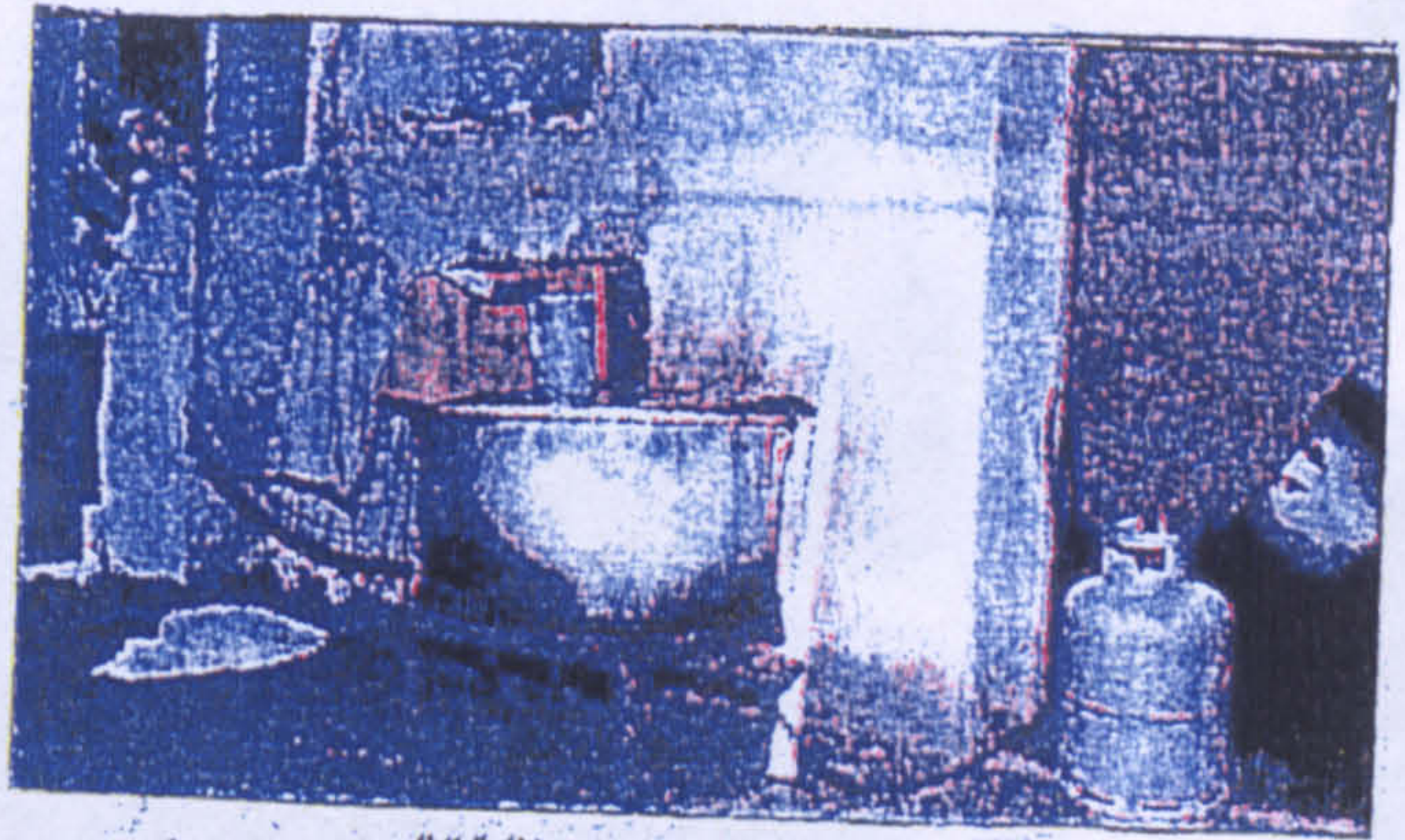
Administration of the restaurant cleanliness draws the customer's attention in the following words: Due to the many complaints of our customers, finding insects in their soup dish, we offer a free gift of strainer with every soup dish.



رؤوس متعفنة تقدم على أنها طازجة

(Al-Riyadh No 11258, Wednesday 21,4,1999:9)

Unedible goat and lamb heads in the deep freezer that will be sold as fresh ones.



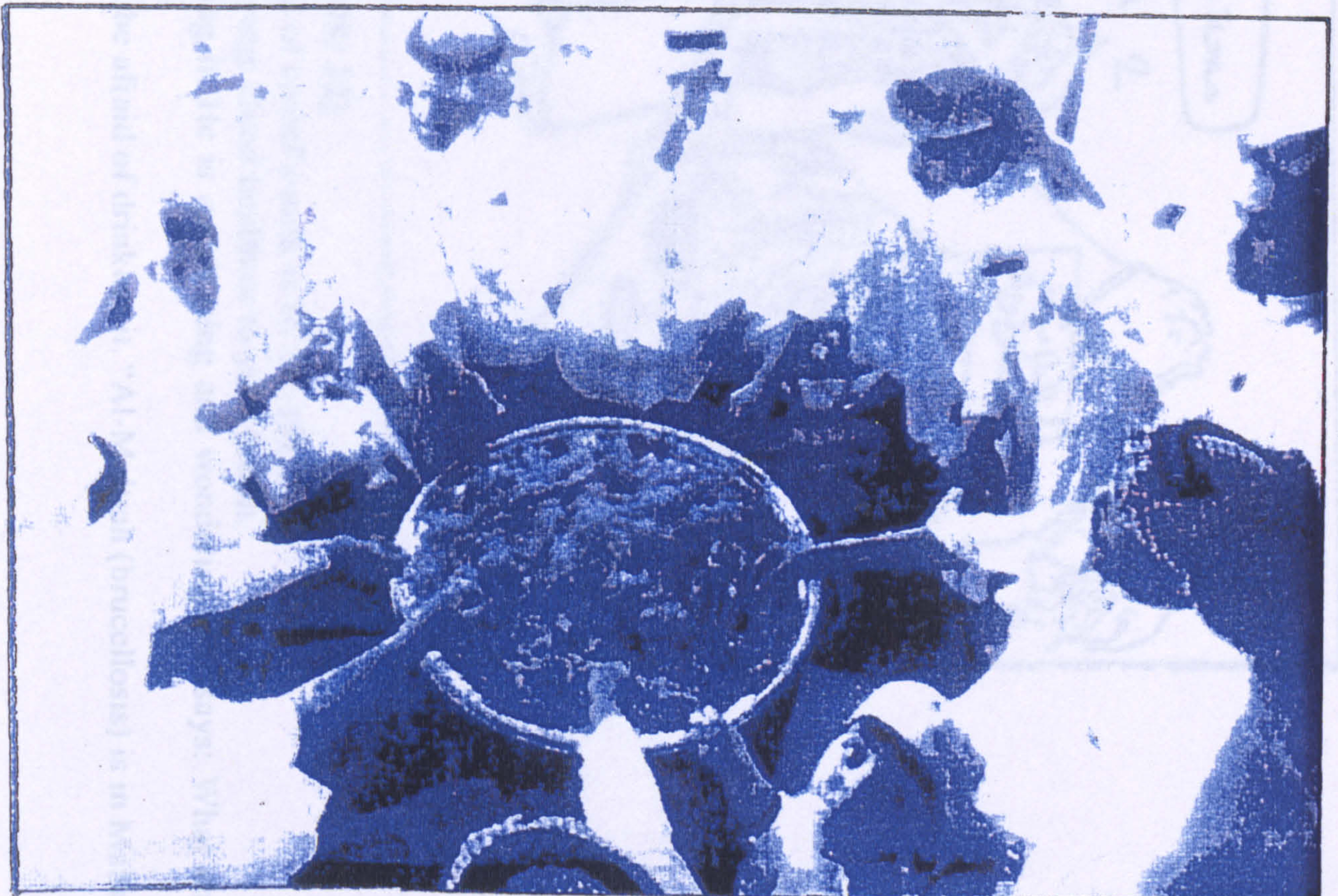
أوان لتجهيز الرؤوس للبيع بعد إذابة اللوج

Ibid

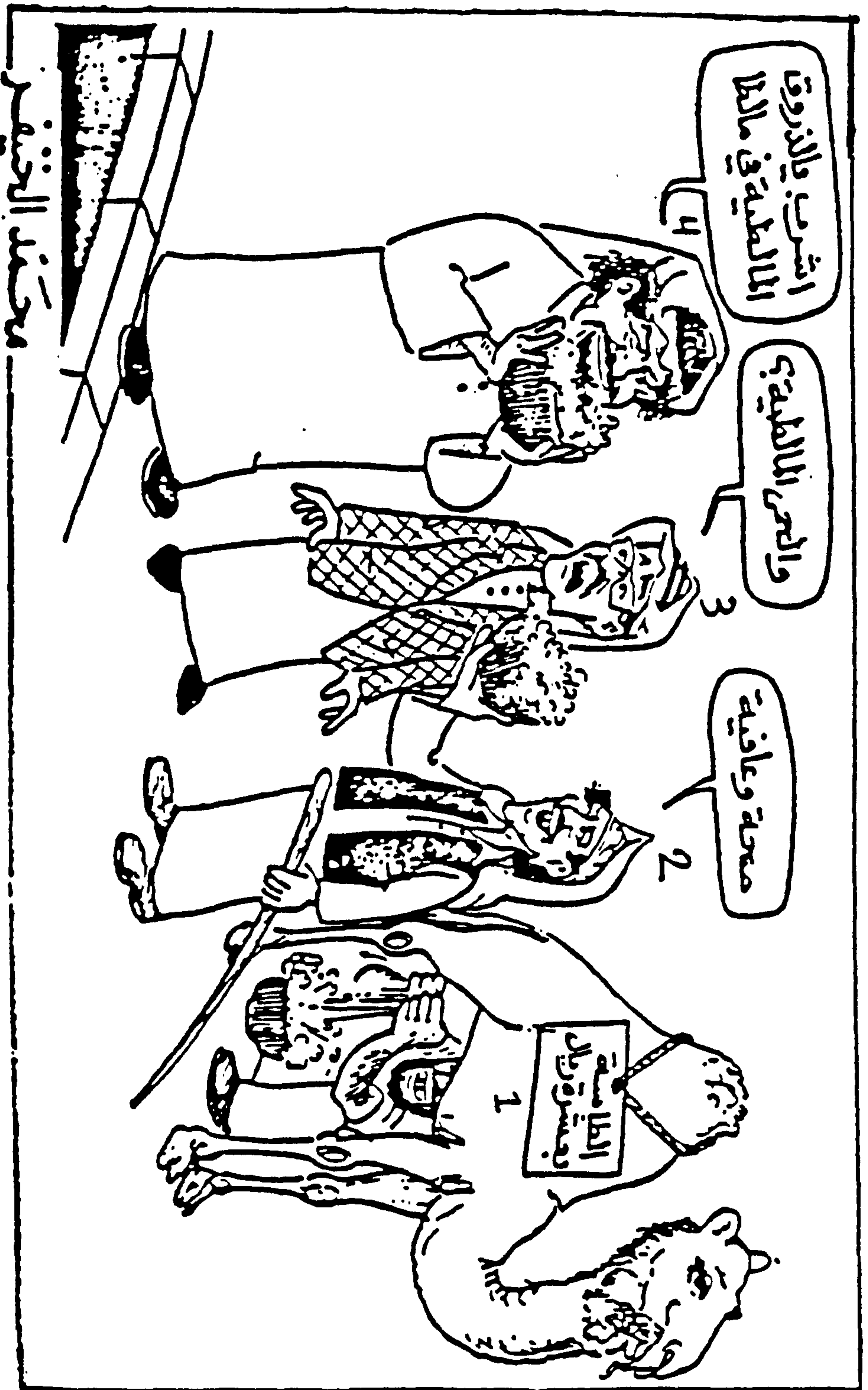
A big cooking pot to defreeze the goat and lamb heads to be ready for sale.



(AL RIYADH ; No.11101,15/11/1998: 7)



(Al-Riyadh. No.11216, Wednesday 10/3/1999: 11)



(Al-Jazeera Newspaper No. 9567, Thursday, 10/12/1998: 32)

- 1- The sign hanging on the camel hump says: A full bowl of camel's milk is 10 SR. (\$1.5).
- 2- The salesman offers the camel milk to the third man saying: Good health or to your health.
- 3- The man is afraid of drinking, the milk without boiling it. He is questioning and wondering and says: What about the brucellosis?
- 4- The fourth man is courageous and says: you should not be afraid of drinking it. "Al-Maltiah (brucellosis) is in Malta.

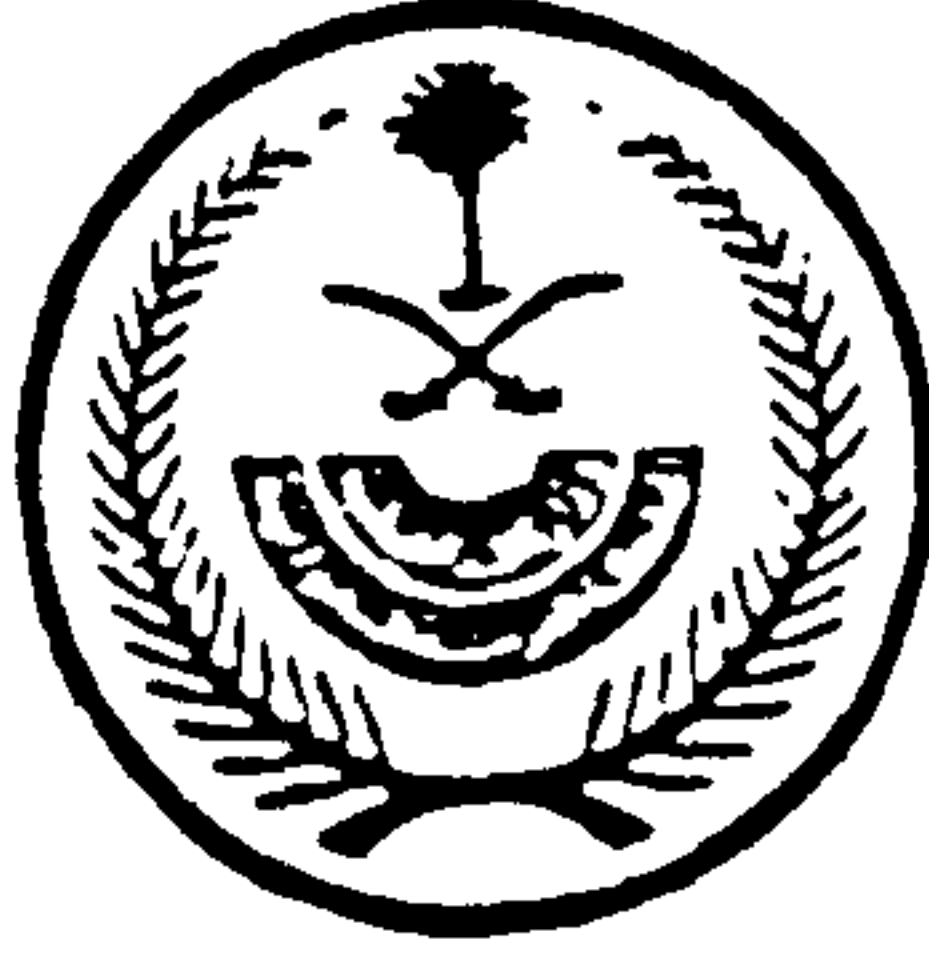


أحد المطاعم وهنا تبدو النظافة أسوأ

[Al-Riyadh, No. 11915, Tuesday 6/2/2001: 4]
Unclean and unorganized fast food restaurant Kitchen

APPENDIX -E-

الرقم: ١٦٠/١٠/١٠١
التاريخ: ١٤١٩/٧/٨
المرفقات:
رقم الملف:



المملكة العربية السعودية
وزارة الداخلية
إمارة منطقة الرياض
(٠٠١)
إدارة التطوير الإداري

In the name of Allah (God) the Merciful the Compassionate

*The Kingdom of Saudi Arabia
Ministry of Interior
Emirate of Riyadh Region
Administrative Development Department*

*No: 101/10/160
Date: October 28-1998*

To Whom It May Concern:

Peace, Mercy and Blessing upon you (Asslam Alikum)

It is to notify you that we have received a letter from Dean of the Faculty of Arts King Saud University dated October 25/1998 which is concerning Ms. Latifah A. Al Abdulatief who is a lecturer in the Social studies Department. She is pursuing her postgraduate study in Sociology at Hull University, England. As part of her fieldwork, she is collecting her data through questionnaire for her Ph.D. degree under the title: The Dietary Habits and Health of Contemporary Saudi Families: A sociological study in the city of Riyadh. This questionnaire shall be distributed only in four quarters in the city of Riyadh (1) Al Worood, (2) Al Rabwah, (3) Al Oud and King Saud University Housing Staff quarters.

Ms Al Abdulatief asked to be permitted to carry out her investigation by giving her a letter of recommendation. Therefore, we grant her this letter to facilitate her work, only in these specified quarters.

Deputy Emirate of Riyadh Region

Abdulla M. Al Bolaihed

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