The COVID-19 Pandemic and Health Inequalities

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Abstract

This essay examines the implications of the COVID-19 pandemic for health inequalities. It outlines historical and contemporary evidence of inequalities in pandemics - drawing on international research into the Spanish flu pandemic of 1918, the H1N1 outbreak of 2009, and the emerging international estimates of socio-economic, ethnic and geographical inequalities in COVID-19 infection and mortality rates. It then examines how these inequalities in COVID-19 are related to existing inequalities in chronic diseases and the social determinants of health, arguing that we are experiencing a *syndemic pandemic*. It then explores the potential consequences for health inequalities of the lockdown measures implemented internationally as a response to the COVID-19 pandemic, focusing on the likely unequal health impacts of the economic crisis. The essay concludes by reflecting on the longer term public health policy responses needed to ensure that the COVID-19 pandemic does not increase health inequalities for future generations.

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Introduction

In 1931 Edgar Sydenstricker outlined inequalities by socio-economic class in the 1918 Spanish flu epidemic by in America, reporting a significantly higher incidence amongst the working classes [1]. This challenged the widely held popular and scientific consensus of the time that held *"the flu hit the rich and the poor alike"* [2] In the 2020 COVID-19 pandemic, there have been similar claims made by politicians and the media that we are 'all in it together' and that the COVID-19 virus 'does not discriminate' [3]. This essay aims to dispel this myth of COVID-19 as a socially neutral disease, by discussing how, just as 100 years ago, there are inequalities in COVID-19 morbidity and mortality rates - reflecting existing unequal experiences of chronic diseases and the social determinants of health. The essay is structured in three main parts. Part one examines historical and contemporary evidence of inequalities in influenza pandemics - drawing on international research into the Spanish flu pandemic of 1918, the H1N1 outbreak of 2009, and the emerging international estimates of socio-economic, ethnic and geographical inequalities in COVID-19 infection and mortality rates. Part two examines how these inequalities in COVID-19 are related to existing inequalities in chronic diseases and the social determinants of health, arguing that we are experiencing a syndemic pandemic. In part three, we explore the potential consequences for health inequalities of the lockdown measures implemented in most countries as a response to the COVID-19 pandemic, focusing on the likely unequal health impacts of the economic crisis. The essay concludes by reflecting on the longer term public health policy responses needed to ensure that the COVID-19 'black swan' event does not increase health inequalities for future generations.

Part 1: Historical and Contemporary Evidence of Inequalities in Pandemics

More recent studies have confirmed Sydenstricker's early findings: there were significant inequalities in the 1918 Spanish flu pandemic. The international literature demonstrates that there were inequalities in prevalence and mortality rates: between high and low income countries, between more affluent and less affluent neighbourhoods and individuals; and between urban and rural areas. For example, India had a mortality rate 40 times higher than Denmark and the mortality rate was 20 times

higher in some South American countries than in Europe [4]. In Norway mortality rates were highest amongst the working class districts of Oslo [5]; in the USA they were highest amongst the unemployed and the urban poor in Chicago [6], and across Sweden there were inequalities in mortality between the highest and lowest occupational classes – particularly amongst men [7]. In contrast, countries with smaller pre-existing social and economic inequalities, such as New Zealand, did not experience any socio-economic inequalities in mortality [8–9]. An urban–rural effect was also observed in the 1918 influenza pandemic whereby, for example, in England and Wales, mortality was 30–40% higher in urban areas [10]. There is also some evidence from the USA that the pandemic had long term impacts on child health and development [11].

Several studies have also demonstrated inequalities in the 2009 H1N1 influenza pandemic. For example, globally, Mexico experienced a higher mortality rate than higher income countries [12]. In terms of socio-economic inequalities, the age- and sex- standardised mortality rate from H1N1 in the most deprived quintile of England's population was three-times higher than in the least deprived [13]. It was also higher in urban compared to rural areas [13]. Similarly, a Canadian study in Ontario, found that hospitalisation rates for H1N1 were associated with lower educational attainment and living in a high deprivation neighbourhood [14]. Another study found positive associations between people with financial issues (e.g. financial barriers to healthcare access) and influenza-like illnesses during the 2009 H1N1 pandemic in the USA [15]. Various studies into cyclical winter influenza in North America have also found associations between mortality, morbidity and symptom severity and socio-economic status amongst adults and children [16-17].

Just as in 1918 and 2009, evidence of social inequalities is already emerging in relation to COVID-19 from Spain, the USA and the UK. Intermediate data published by the Catalonian government in Spain suggests that the rate of COVID-19 infection is six- or seven-times higher in the most deprived areas of the region compared to the least deprived [18]. Similarly, in preliminary USA analysis, Chen and Krieger (2020) found area-level socio-spatial gradients in confirmed cases in Illinois and positive test results in New York City, with dramatically increased risk of death observed among residents of the most disadvantaged counties [19]. Similarly, with regards to ethnic inequalities in COVID-19, data from England and Wales has found that people who are black, Asian and minority ethnic (BAME)

accounted for 34.5% of 4,873 critically ill COVID-19 patients (in the period ending 16/4/2020) and much higher than the 11.5% seen for viral pneumonia between 2017-2019 [20]. Only 14% of the population of England and Wales are from BAME backgrounds. Even more stark is the data on racial inequalities in COVID-19 infections and deaths that is being released by various states and municipalities in the USA (but not nationally). For example, in Chicago (in period ending 17/04/20), 59.2% of COVID-19 deaths were amongst Black residents and the COVID-19 mortality rate for Black Chicagoans is 34.8 per 100,000 population compared to 8.2 per 100,000 population amongst White residents [21]. There will likely be an interaction of race and socio-economic inequalities, demonstrating the intersectionality of multiple aspects of disadvantage coalescing to further compound illness and increase risk of mortality [22].

Part 2. The syndemic of COVID-19, Chronic Disease and the Social Determinants of Health

The COVID-19 pandemic is occurring against a backdrop of social and economic inequalities in existing non-communicable diseases (NCDs) as well as inequalities in the social determinants of health. Inequalities in COVID-19 infection and mortality rates are therefore arising as a result of a syndemic of COVID-19, inequalities in chronic diseases, and the social determinants of health. The prevalence and severity of the COVID-19 pandemic is magnified because of the pre-existing epidemics of chronic disease - which are themselves socially patterned and associated with the social determinants of health. The concept of a *syndemic* was originally derived from understanding the relationships between HIV/AIDS, substance use, and violence in the USA in the 1990s [23]. A syndemic exists when risk factors or co-morbidities are intertwined, interactive and cumulative - adversely exacerbating the disease burden and additively increasing its negative effects: '*A syndemic is a set of closely intertwined and mutual enhancing health problems that significantly affect the overall health status of a population within the context of a perpetuating configuration of noxious social conditions'* [24, p13]. We argue that for the most disadvantaged communities, COVID-19 is experienced as a syndemic - a co-occurring, synergistic pandemic which interacts with and exacerbates their existing chronic health and social conditions (Figure 1).

Figure 1: The Syndemic of Covid-19, Non-Communicable Diseases (NCDs) and the Social Determinants of Health (adapted from [23] and [30])

Minority ethnic groups, people living in areas of higher socio-economic deprivation, those in poverty and other marginalised groups (such as homeless people, prisoners and street-based sex workers) generally have a greater number of co-existing chronic health conditions, which are more severe and they experience them at a younger age. For example, people living in more socio-economically disadvantaged neighbourhoods and minority ethnic groups have higher rates of almost all of the known underlying clinical risk factors that increase the severity and mortality of COVID-19 including: hypertension, diabetes, asthma, COPD, heart-, liver-, renal- disease, cancer, cardiovascular disease, obesity and smoking [25-28]. Likewise, minority ethnic groups in Europe, the USA and other high income countries experience higher rates of the key COVID-19 risk factors including coronary heart disease and diabetes [27]. Similarly, the Gypsy/Roma community - one of the most marginalised minority groups in Europe - has a smoking rate that is 2-3 times the European average, increased rates of respiratory diseases (such as COPD) and other COVID-19 risk factors [28].

These inequalities in chronic conditions arise as a result of inequalities in exposure to the social determinants of health: the conditions in which people 'live, work, grow and age' including working conditions, unemployment, access to essential goods and services (e.g. water, sanitation and food), housing and access to health care [29-30]. By way of example, there are considerable occupational inequalities in exposure to adverse working conditions (e.g. ergonomic hazards, repetitive work, long hours, shift work, low wages, job insecurity) – they are concentrated in lower skill jobs. These working conditions are associated with increased risks of respiratory diseases, certain cancers, musculoskeletal disease, hypertension, stress and anxiety [31]. In addition to these long-term exposures, inequalities in working conditions may well be impacting on the unequal distribution of the COVID-19 disease burden. For example, lower paid workers (where BAME groups are disproportionately represented) - particularly in the service sector (e.g. food, cleaning or delivery services) - are much more likely to be designated as key workers and thereby are still required to go to work and reliant on public transport for doing so. This all increases their exposure to the virus.

Similarly, access to health care is lower in disadvantaged and marginalised communities – even in universal health care systems [32]. In England, the number of patients per general practitioner is 15% higher in the most deprived areas than in least deprived [33]. Medical care is even more unequally distributed in countries such as the USA where around 33 million Americans - from the most disadvantaged and marginalised groups - have insufficient or no health care insurance [26]. This reduced access to health care - before and during the outbreak – contributes to inequalities in chronic disease and is also likely to lead to worse outcomes from COVID-19 in more disadvantaged areas and marginalised communities. People with existing chronic conditions (e.g cancer or CVD) are less likely to now receive treatment and diagnosis as health services are overwhelmed by dealing with the pandemic.

Housing is also an important factor in driving health inequalities [34]. For example, exposure to poor quality housing is associated with certain health outcomes e.g. damp housing can lead to respiratory diseases such as asthma whilst overcrowding can result in higher infection rates and increased risk of injury from household accidents [34]. Housing also impacts on health inequalities materially through costs (e.g. as a result of high rents) and psychosocially through insecurity (e.g. short-term leases) [34]. Lower socio-economic groups have a higher exposure to poor quality or unaffordable, insecure housing, and therefore have a higher rate of the negative health consequences [35]. These inequalities in housing conditions may also be contributing to inequalities in COVID-19. For example, deprived neighbourhoods are more likely to contain houses of multiple occupation, smaller houses with a lack of outside space, as well as have higher population densities (particularly in deprived urban areas) and lower access to communal green space [26]. These will likely increase COVID-19 transmission rates - as was the case with H1N1 where strong associations were found with urbanity [13].

The social determinants of health also work to make people from marginalised communities more vulnerable to infection from COVID-19 – even when they have no underlying health conditions. Decades of research into the psychosocial determinants of health have found that the chronic stresses of material and psychological deprivation is associated with immunosuppression [36]. Psychosocial feelings of subordination or inferiority as a result of occupying a low position on the

social hierarchy stimulate physiological stress responses (e.g. raised cortisol levels) which, when prolonged (chronic), can have long term adverse consequences for physical and mental health [37]. By way of example, studies have found consistent associations between low job status (e.g. low control and high demands), stress-related morbidity and various chronic conditions including coronary heart disease, hypertension, obesity, musculoskeletal conditions, and psychological ill health [38]. Likewise, there is increasing evidence that living in disadvantaged environments may produce a sense of powerlessness and collective threat among residents leading to chronic stressors that, in time, damage health [39]. Studies have also confirmed that adverse psychosocial circumstances increase susceptibility - influencing the onset, course and outcome of infectious diseases - including respiratory diseases like COVID-19 [40].

Part 3. The Great Lockdown: the COVID-19 Economic Crisis and Health Inequalities

The impact of COVID-19 on health inequalities will not just be in terms of virus-related infection and mortality, but also in terms of the health consequences of the policy responses undertaken in most countries. Whilst traditional public health surveillance measures of contact tracing and individual quarantine were successfully pursued by some countries (most notably by South Korea and Germany) as a way of tackling the virus in the early stages, most other countries failed to do so and governments worldwide were eventually forced to implement mass quarantine measures - in the form of lockdowns. These state imposed restrictions - usually requiring the government to take on emergency powers - have been implemented to varying levels of severity but all have in common a significant increase in social isolation and confinement within the home and immediate neighbourhood. The aims of these unprecedented measures are to increase social and physical distancing and thereby reduce the effective reproduction number (eR_0) of the virus to below one. For example, in the UK, individuals are only allowed to leave the home for one of four reasons (shopping for basic necessities, one hour of exercise a day, medical needs, travelling for work purposes). Following Wuhan province in China, most of the lockdowns have been implemented for at least 12 weeks.

The immediate pathways through which the COVID-19 emergency lockdowns are likely to have unequal health impacts are multiple – ranging from unequal experiences of lockdown (e.g. due to job and income loss, overcrowding, urbanity, access to green space, key worker roles); how the lockdown itself is shaping the social determinants of health (e.g. reduced access to health care services for non-COVID-19 reasons as the system is overwhelmed by the pandemic); and inequalities in the immediate health impacts of the lockdown (e.g. in mental health and gender-based violence). However, arguably, the longer term and largest consequences of the 'great lockdown' for health inequalities will be through political and economic pathways (Figure 1). The world economy has been severely impacted by COVID-19 – with almost daily record stock market falls, oil prices have crashed and there are record levels of unemployment (e.g. 5.2 million people filed for unemployment benefit in just one week in April 2020 in the USA) despite the unprecedented interventionist measures undertaken by some governments and central banks - such as the £300 billion injection by the UK government to support workers and businesses. The pandemic has slowed China's economy with a predicted loss of $65 billion as a minimum in the first quarter of 2020. Economists fear that the economic impact will be far greater than the financial crisis of 2007/8 and they say that it is likely to be worse in depth (but hopefully not length) than the Great Depression of the 1930s. Just like the 1918 influenza pandemic (which had severe impacts on economic performance and increased poverty rates), the COVID-19 crisis will have huge economic, social and - ultimately - health consequences.

Previous research has found that sudden economic shocks (like the collapse of communism in the early 1990s and the global financial crisis [GFC] of 2008 [41]) lead to increases in morbidity, mental ill health, suicide and death from alcohol and substance use. For example, following the GFC, worldwide an excess of suicides were observed in the USA, England, Spain and Ireland [42]. There is also evidence of other increases in poor mental health after the GFC including self-harm and psychiatric morbidity [41-42]. These health impacts were not shared equally though – areas of the UK with higher unemployment rates had greater increases in suicide rates and inequalities in mental health increased with people living in the most deprived areas experiencing the largest increases in poor mental health and self-harm [43]. Further, unemployment (and its well-established negative health impacts in terms of morbidity and mortality [38]) is disproportionately experienced by those with lower skills or who live in less buoyant local labour markets [26]. So, the health consequences of the

COVID-19 economic crisis are likely to be similarly unequally distributed – exacerbating heath inequalities.

However, the effects of recessions on health inequalities also vary by public policy response with countries such as the UK, Greece, Italy and Spain who imposed austerity (significant cuts in health and social protection budgets) after the GFC experiencing worse population health effects than those countries such as Germany, Iceland and Sweden who opted to maintain public spending and social safety nets [41]. Indeed, research has found that countries with higher rates of social protection (such as Sweden) do not experience increases in health inequalities during economic recessions [44]. The importance of social protection levels for preventing health inequalities from increasing during recessions is also demonstrated within countries - for example, the increased social expenditure on old age pensioners in the UK after the GFC prevented health inequalities increasing in this group [45]. These findings are in keeping with previous studies of the effects of public sector and welfare state contractions and expansions on trends in health inequalities in the UK, US and New Zealand [26, 46-49]. For example, inequalities in premature mortality and infant mortality by income and ethnicity in the USA decreased during the period of welfare expansion in the USA ('war on poverty' era 1966 to 1980), but they increased again during the Reagan-Bush period (1980-2002) when welfare services and health care coverage were cut [46]. Similarly, in England, inequalities in infant mortality rates reduced as child poverty decreased in a period of public sector and welfare state expansion (2000 to 2010) [47], but increased again once austerity was implemented and child poverty rates increased (2010 to 2017) [48].

Conclusion

So this essay makes for grim reading for researchers, practitioners and policymakers concerned with health inequalities. Historically, previous influenza pandemics have been experienced unequally with higher rates of infection and mortality amongst the most disadvantaged communities – particularly in more socially unequal countries [8-9]. Emerging evidence from a variety of countries suggests that these inequalities are being mirrored today in the COVID-19 pandemic. Both then and now, these inequalities have emerged through the syndemic nature of COVID-19 – as it interacts with and

exacerbates existing social inequalities in chronic disease and the social determinants of health. COVID-19 has laid bare our longstanding social, economic and political inequalities with studies showing that even before the COVID-19 pandemic, life expectancy amongst the poorest groups were already declining in the UK and the USA and mortality trends in Europe suggests that inequalities have increased over the last decade [50]. It seems likely that there will be a post-COVID-19 global economic slump - which could make the health equity situation even worse, particularly if the same health-damaging policies of austerity are implemented again. It is vital that this time, the policy responses needed to ensure that the COVID-19 pandemic does not increase health inequalities for future generations (such as social safety nets, public services and inclusive green growth) - are implemented) are implemented. Public health must 'win the peace' as well as the 'war'.

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