

Patient satisfaction with lower gastrointestinal endoscopy: doctors, nurse and nonmedical endoscopists

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Abstract

Aim Assessment of patient satisfaction with lower gastrointestinal endoscopy (LGE) comprising colonoscopy and flexible sigmoidoscopy is gaining increasing importance. We have now trained non healthcare professionals such as nonmedical endoscopists (NMEs) to perform LGE to overcome shortage of trained endoscopists. The aim of this study was to prospectively determine patient satisfaction, factors affecting satisfaction with LGE and to compare with nurses, NME and medical endoscopists, in terms of patient satisfaction.

Method Consecutive patients undergoing LGE answered specially developed patient satisfaction questionnaire at discharge and 24 h thereafter. This questionnaire was a modification of m-Group Health Association of America questionnaire. Construct and face validity of questionnaire were tested by an expert group. Demographic and clinical data was prospectively collected. Multivariate regression analysis was performed to determine factors influencing patient satisfaction.

Results Some 503 patients were surveyed after LGE. Examinations were performed by nurse ($n = 105$), doctor ($n = 191$), or NMEs ($n = 155$). There were no differences between three groups in terms of completion rates/complications. No differences were detected between endoscopists in patient rating for overall satisfaction ($P = 0.6$), technical skills ($P = 0.58$), communication skills ($P = 0.61$) or interpersonal skills (0.59). Multivariate regression analysis showed that higher preprocedure anxiety, history of pelvic operations/hysterectomy and higher pain scores were associated with adverse patient satisfaction and preprocedure anxiety, history of hysterectomy and female gender were associated with higher pain scores.

Conclusion This study has shown that there are no differences in patient satisfaction with LGE performed by nurse, doctor or NME. The most important factor affecting patient satisfaction is degree of discomfort/pain experienced by patient.

Keywords Patient satisfaction, nonmedical colonoscopists

Introduction

Patient satisfaction is an important measure of performance standards and accountability of the endoscopists. Although variably defined, patient satisfaction with endoscopy represents a patients' emotional evaluation and is based on their experience of the endoscopy service they have had.

Monitoring satisfaction is important for quality assurance, evaluation of treatments and also possibly it affects health outcomes. The American Society of Gastrointes-

tinal Endoscopy has included patient satisfaction as an important indicator in all quality assurance programmes for endoscopy [1]. Patient satisfaction feedbacks help healthcare staff identify areas of concern or failure; patients needs and enables a further assessment of changes [2].

Lower gastrointestinal endoscopy (LGE) comprising flexible sigmoidoscopy and colonoscopy is widely used for diagnosis and treatment of colonic disorders. LGE has become an increasingly accepted method of screening the colon for neoplasia and its effectiveness in both diagnosing and following up patients with colorectal cancer is well established [3–5]. However, there is an increasing demand for LGE services, primarily with the introduction of screening programmes in the Western world [6]. Though both doctors and nurses perform LGE, there

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continues to be a shortage of endoscopists. To overcome such shortage, the Department of Health, UK introduced the Pilot programme to train non healthcare professionals to perform endoscopy [7]. For the purposes of this study, non healthcare professionals performing LGE will be termed nonmedical endoscopists (NMEs). These non healthcare professionals include radiographers, physiologists, administrative staff, phlebotomists, health care assistants, and others, whose role is being extended to include provision of endoscopy services. We have trained the first batch of NMEs in Cottingham, UK and have recently shown that they are safe and effective in performing LGE [8]. However, there are no studies comparing patient satisfaction between healthcare professionals such as doctors/nurses and NMEs. Moreover, it is still unclear as to which factors affect patient satisfaction and patients' perception of pain/discomfort during the procedure.

The aim of our study therefore was to determine patients' satisfaction in our endoscopy unit, and to compare doctors, nurses and NMEs in terms of patient satisfaction and also to identify factors associated with the same.

Method

Study participants and data collection

This study was performed in the endoscopy unit at Castle Hill Hospital, Cottingham, UK from August, 2004 to December, 2005. The study was approved by the South Humber Research Ethics Committee, UK. All patients undergoing LGE were included in the study, except patients undergoing both lower and upper gastrointestinal endoscopies in the same sitting and patients not willing to participate. Patients were sent invitation letters 3 weeks prior to the procedure, and this included a patient information leaflet (approved by the Ethics committee) outlining the aims of the study and what it entailed. Once patients agreed to participate in the study, they signed a consent form. The principal investigator was available to answer patient questions. A blinded research co-ordinator handed two questionnaires to the patients- one before the procedure (Hospital Anxiety and Depression scale questionnaire – HAD) and the second one after the procedure (patient satisfaction questionnaire). The HAD scale was used for the assessment of preprocedure anxiety, and it has been previously validated for use in this setting [9].

Patients were randomly allocated to either one of the three lists by the administrative staff. This is the normal protocol in our unit. There was no specific randomization for the purposes of this study.

All patients then had their LGE, and were allowed to recover as per the existing protocols in the unit. All participants then completed the specifically designed satisfaction questionnaire at the point of discharge, but before they were informed the results of their endoscopy (to prevent any bias). Participants were also given another satisfaction questionnaire (with a self-addressed prepaid envelope) to be completed 24 h after the procedure, and sent back to the endoscopy unit.

In addition, 100 patients were asked to rank the 21 items on the questionnaire in decreasing order of importance to them. The aim was to determine which of the 21 questions were most relevant to patients with regard to a good experience of endoscopy.

Phone calls were made approximately 2 weeks after the procedure to all the nonrespondents. These calls were repeated at 4 weeks in case of further nonresponders. No further calls were made.

Endoscopists

All the LGE in the study was carried out by three different types of endoscopists – medical endoscopists (MEs), nurse endoscopists (NEs) and NMEs. The doctors included in the study were consultants or senior colorectal trainees [Joint Advisory Group on GI endoscopy (JAG) certified]. The NE was a fully trained, JAG-certified endoscopist, who is also a trainer on different endoscopy courses. The NME included a fully trained nonmedical non nurse endoscopist. The individual is a science graduate, and was trained to perform lower gastrointestinal endoscopy, under the pilot programme started in 2003 by the Department of Health. The second NME previously worked as an administrator in the Consultant's office. This individual is now pursuing the Bachelor of Science (coloproctology) degree at the University of Hull. The details of NME training are published elsewhere [6].

The endoscopists were asked to rank the items in terms of how important they felt the different aspects of the questionnaire were with regards to the patients' perception of satisfaction.

In addition to the above, demographic and clinical features recorded from all patients included age, gender, weight, height, clinical indications, past and family history, results and procedural findings.

Patient satisfaction questionnaire

The American Society for Gastrointestinal Endoscopy modified the GHAA-9 satisfaction questionnaire and developed the instrument (m-GHAA 9) for measuring patient satisfaction with endoscopy [1]. This mGHAA-9

is based on six aspects of patient care, and the remaining three questions in the questionnaire include an overall rating of the visit and inquiries into whether the patient would have the same procedure at the same hospital. We modified this questionnaire further to reflect the endoscopy process in the National Health Service in the UK.

The content validity and the items' face validity were tested by a group of experts, including surgeons, nurses and NMEs. The questionnaire was then tested in a group of 50 patients, and items that were not answered by at least 10% of patients were deleted. Three questions were deleted from the final questionnaire, based on the analysis of the first 50 respondents. These patients were not included in the study.

Statistical analysis

All the data were analysed using SPSS (v11.0) software (SPSS, Chicago, IL, USA). Patient satisfaction and satisfaction with sedation were compared among the three groups using the Mann–Whitney *U*-test. Demographic and baseline characteristics were compared with the use of Mann–Whitney *U*-test for continuous data and χ^2 test for categorical data. All other factors were compared between the groups using Independent samples *t*-test, with $P < 0.05$ being significant. The weighted kappa test was used to correlate the answer provided immediately after endoscopy with those provided in the mail questionnaires. Descriptive statistics like frequency, medians and inter-quartile ranges were performed. Univariate analysis was performed to test the relation between different variables and the primary outcome (patient satisfaction and pain scores). In order to determine factors determining patient satisfaction with endoscopy, multivariate regression analysis was performed and $P < 0.05$ was considered significant.

Results

A total of 561 patients undergoing lower gastrointestinal endoscopy were invited to participate in the study. However, only 503 patients were included. Out of the 58 excluded patients, 36 marked the questionnaire incompletely, and the remainder gave multiple responses to the same question.

General results

Out of 503 procedures, 332 were colonoscopies and 171 were flexible sigmoidoscopies. Doctors performed 151 colonoscopies and 44 flexible sigmoidoscopies, whereas NEs performed 110 colonoscopies and 51 flexible sigmoidoscopies. NMEs performed 76 flexible sigmoido-

Table 1 Baseline characteristics in the three groups.

	ME	NE	NME	<i>P</i> -value
Age (median)	62	60	63.5	
Gender (male:female)	104:87	87:68	88:67	–
Intravenous				
Midazolam	2.5 mg	2.0 mg	3.0 mg	0.96
Fentanyl	75 μ g	75 μ g	100 μ g	0.88
Entonox	prn	prn	prn	–
Endoscopy type				
FS*	44	51	76	0.091
Colonoscopy	151	110	71	0.142
Preprocedure anxiety scores	5	6.5	5.4	0.925

*Flexible sigmoidoscopy.

scopies and 71 colonoscopies in the study period. General patient characteristics including demographic features across all groups are shown in Table 1. In the colonoscopy group, 90 patients received Entonox and 242 patients received intravenous sedation (midazolam with fentanyl). Only three patients in the flexible sigmoidoscopy group received sedation.

The indications for colonoscopy were rectal bleeding (33%), change in bowel habit (25%), polyp follow up (22%), colorectal cancer follow up (12%) and abdominal pain (8%). The preprocedure anxiety scores in the flexible sigmoidoscopy and colonoscopy group as well in all the groups are shown in the Table 1.

Correlation between direct and postal questionnaires and validation of questionnaire

Out of 503 questionnaires, only 412 patients returned the questionnaires at 24 h. The inter-rater agreement (weighted kappa) between the question on overall satisfaction for the direct and postal questionnaires was 0.82. This signifies very good agreement between the two scores. The weighted kappa between the question on pain score when asked immediately post-endoscopy and at the 24-h follow up was 0.72.

Overall satisfaction

The overall satisfaction with lower gastrointestinal endoscopy was a median 94 (range: 38–100). However, it is difficult to assess an isolated single satisfaction score, though a score above 90 is generally indicative of good performance.

The median satisfaction score in the colonoscopy group was 96 (range: 88–100) and the median score for flexible sigmoidoscopy was 91 (range: 82–98) (Table 2). These differences were not statistically significant ($P = 0.4$).

Table 2 Patient assessment in all groups.

	ME	NE	NME	Significance <i>P</i> -value
Overall patient satisfaction	96	95	97	0.1
Patient satisfaction at 24 h	95	95	98	0.1
Pain scores				
For colonoscopy				
Discharge	21	18	23	0.3
24 h	22	20	21	0.1
For FS*				
Discharge	5	5	7	0.1
Pain scores on sedation				
Entonox	12	18	16	0.9
IV sedation	34	28	32	0.8
Adverse experience	12	17	14	0.3

*Flexible sigmoidoscopy

The median satisfaction scores for the three different types of endoscopists were 96, 95 and 97 respectively for doctors, nurses and nonmedical personnel. Therefore, there were no statistically significant differences between the three groups, in terms of patients' perception of satisfaction. Furthermore, a total of 416 patients responded to the repeat questionnaire at 24 h, and we lost 87 patients to follow up despite telephonic reminders. Importantly, there were still no differences in patient satisfaction between the three groups when marked at 24 h post-procedure.

We defined adverse endoscopic experience as a satisfaction score of less than 50 mm on the Visual Analogue Scale (VAS), a pain score more than 50 mm on the VAS, or a lack of willingness to repeat the endoscopy again. This definition was adopted for the study and is not based on any previous studies. Among 503 patients, only 41 patients (8%) had an adverse endoscopic experience. Twelve such patients had endoscopy under a doctor, whereas 15 and 14 patients respectively had the procedure under NE and NME. Once again, these differences were not statistically significant ($P = 0.3$).

Pain scores and satisfaction with sedation

The median pain scores were 14 and 32 respectively for Entonox and IV sedation groups. These differences were statistically significant ($P = 0.01$). However, the median pain scores were similar in the three groups for colonoscopy (0.213) and flexible sigmoidoscopy ($P = 0.126$).

Comparison among doctors, NEs and NMEs

There was no difference between the doctors, NEs and NMEs in terms of completion rates or the time to caecum or total colonoscopy time (Table 3). No differences were

Table 3 Technical outcome in all the groups.

	ME	NE	NME	Significance <i>P</i> -value
Completion rates	94.5%	96%	93.5%	0.3
Time to caecum	14 min	12 min	16.8 min	0.09
Total time	21 min	19 min	21 min	0.1
Time to discharge	36 min	43 min	38 min	0.09

detected between the endoscopists in patient rating (Table 4) for overall satisfaction ($P = 0.6$), technical skills of the endoscopist ($P = 0.58$), communication skills ($P = 0.61$) or interpersonal skills of the endoscopist (0.59).

Multivariate analysis to determine factors affecting patient satisfaction and pain perception

On multivariate analysis, higher preprocedure anxiety, history of pelvic surgery/hysterectomy and higher pain scores were associated with adverse patient satisfaction (Table 5). In the case of pain scores, preprocedure anxiety, history of pelvic surgery/hysterectomy and female gender were associated with higher pain scores on multivariate analysis.

Patient and endoscopists' preferences

Among the 50 patients who marked their priorities on the questionnaire, pain control was the most important factor associated with satisfaction. The next factor was the technical skills of the endoscopists and waiting time for appointment. The endoscopists on the other hand marked the personal manner of the endoscopists followed by the attitude of the endoscopists as the most important markers of possible patient satisfaction. Notably, endoscopists ranked the pain/discomfort levels as the third priority, and the personal manner of the nurses and supporting staff as subsequent factor influencing patient satisfaction.

Table 4 Patient satisfaction with lower gastrointestinal endoscopy.

Category (out of 5)	ME	NE	NME	<i>P</i> -value
General satisfaction	1.7	1.66	1.73	0.60
Technical skills	1.72	1.66	1.72	0.58
Communication skills	1.5	1.44	1.52	0.6
Interpersonal skills	1.54	1.49	1.55	0.59
Time spent with patient	1.65	1.51	1.66	0.07

Table 5 Multivariate regression analysis of factors affecting patient satisfaction.

	Hazards ratio (95%CI)	P-value
Age	1.95 (0.64, 2.96)	0.3
Female gender	0.92 (0.67, 1.96)	0.1
H/o pelvic procedures	0.60 (0.31, 0.42)	0.04
Type of procedure	4.5 (2.559, 6.65)	0.9
Pretest anxiety scores	2.1 (1.4, 4.94)	0.042
Procedural pain	0.1.902 (1.1, 2.89)	0.03
Colon resection	3.4 (0.8, 5.6)	0.95
Endoscopist type	1.6 (0.62, 3.1)	0.913

Bold values identify statistically significant factors.

Discussion

Patient satisfaction has gained increasing importance and is at the forefront of healthcare outcomes measurements in recent years [10]. Moreover, it is important for patients to have a good experience of colonoscopy or flexible sigmoidoscopy, if they are to be compliant with screening programmes [11]. With increasing demand for lower gastrointestinal endoscopy, quality assurance with monitoring of patient satisfaction and integration of feedback plays an important role.

As mentioned previously, nonmedical personnel have been trained to perform colonoscopy, to overcome the shortage of endoscopists. In this study, we compared NMCs with doctors and NCs. There were no differences between the three groups in terms of completion rates, time to caecum, patient satisfaction and pain scores. Moreover, patients did not find any difference between the three groups in terms of key satisfaction areas like technical skills, time spent and explanation given by the endoscopists. Patients were asked if they would undergo the procedure again (if they had to) under the same endoscopists. It is interesting to see that once again the number of patients agreeing was similar in the three groups (96%, 97% and 96% respectively for doctors, NEs and NMEs). We believe that these findings are extremely important. The current study is the first study of this size to evaluate patient findings comparing medical, nurse and NMEs. Though this study is not a randomized controlled trial, the findings are reassuring regarding all the three groups in terms of satisfaction and completion rates. Notably, there were no complications, either endoscopy-related or sedation-related in any of the groups.

It is currently difficult to determine which factors affect patient satisfaction. Several preprocedure factors have been proposed as predictors of decreased endoscopic satisfaction. In our multivariate analysis of all questions,

as well as demographics and clinical features, we found that higher preprocedure anxiety scores, pain during the procedure and a history of pelvic surgery/hysterectomy were associated with least patient satisfaction scores. This is not surprising, and previous studies have shown that patients' perceptions regarding the procedure and the associated anxiety can have an impact on patient satisfaction [12].

Higher pain scores were associated with poor patient satisfaction. It is interesting to note that patients receiving intravenous sedation experienced greater pain, as compared with those receiving Entonox gas.

We noted differences in patient and endoscopists perception of factors associated with satisfaction. Adequacy of pain control was the number one factor for the patients, followed by the technical skills of the endoscopists and waiting time for appointment. The endoscopists prioritized the personal manner of the endoscopists followed by the attitude of the endoscopists as the most important markers of possible patient satisfaction. Surprisingly, pain/discomfort associated with the procedure was the third most important factor for the healthcare professional. In a previous study [13], patients marked friendliness of the endoscopists as the most important factor. However, Yacavone *et al.* found that 16% of all patients in their study ranked adequacy of pain control as the number one factor influencing their satisfaction, and this item was ranked overall number two [10]. It is therefore important to address these issues in any quality assurance programmes on endoscopy.

There are several shortcomings with our study. First, the questionnaire was a modification of the mGHAA-9 questionnaire. Yacavado *et al.* [10] have shown that the questionnaire may not be totally valid. Therefore, we modified the questionnaire and carried out a face- and construct validity test, and used a cohort of 50 patients to test the questionnaire. However, the questionnaire includes satisfaction with endoscopy and sedation, and definitely requires further validation, with a larger cohort of patients. Second, the entire study was carried out in a single institution and hence reflects the views of a particular cross-section of population. We believe that assessment of satisfaction should be carried out in multiple centres, and indeed this forms part of the UK Government initiative in using the Global Rating Scale [14].

In conclusion, we have shown that there are no differences between medical, nurse and NMEs in terms of patient satisfaction with lower gastrointestinal endoscopy. The most important factor affecting patient satisfaction is the degree of discomfort/pain experienced by the patient.

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