RESEARCH

Patient satisfaction with the colonoscopy procedure: endoscopists overestimate the importance of adverse physical symptoms

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Abstract

Background Colonoscopy is a frequently performed procedure associated with a substantial burden for the patient. Most of what is known about patient satisfaction stems from surveys that target issues doctors believe to be important. It has been noticed that patients often focus on different aspects.

Aim To have patients and endoscopists rate the extent to which each of a list of patient-generated issues-of-concern contributes to patient satisfaction with the colonoscopy procedure.

Subjects A sample of consecutive patients undergoing colonoscopy in a Dutch tertiary teaching hospital and a convenience sample of endoscopists.

Methods Colonoscopy patients and endoscopists were asked to rate on a five-point Likert scale the importance of 55 items concerning the colonoscopy procedure for patient satisfaction. Items were derived from focus group sessions with colonoscopy patients. Endoscopists were invited to rate the importance of the same set of items from a patient perspective. An analysis was carried out of whether patients and endoscopists rated the importance of items differently.

Results 69 patients and 34 endoscopists completed the questionnaire. The ratings of the endoscopists were significantly different from those of patients ($p < 0.0001$). Endoscopists underestimated the importance of involving patients in decisions, discussing risks and complications, providing the opportunity for substantive questions and offering a comfortable temperature in the examination room. Endoscopists overestimated the importance of adverse physical symptoms,

such as pain and abdominal cramps, and the role of the treating doctor.

Conclusions Endoscopists do not have a good perception of the items that contribute most to patient satisfaction with the colonoscopy procedure. Overcoming this gap may be an essential step towards improving patient satisfaction by targeting those concerns most relevant to patients.

Introduction

Colonoscopy is a frequently performed procedure. Its use is increasing, owing to an increased interest in colorectal cancer screening programmes.¹ Colonoscopy is an effective diagnostic and preventive tool, but is also an invasive procedure, associated with a substantial burden for the patient.^{2–8}

Improving patient satisfaction with the procedure is of interest for several reasons. First, patient satisfaction is an important quality measure and increasing satisfaction with this burdensome procedure will enhance the quality of care.⁹ Second, improved satisfaction will probably increase compliance. A study by Bleiker et al² showed that 25% of patients with a family history of colorectal cancer deviate from recommended screening intervals because of perceived barriers such as discomfort and embarrassment. Peña and colleagues⁶ showed that preprocedural nervousness was a strong predictor of unwillingness to undergo a repeat procedure. Several studies have investigated factors related to patient satisfaction with lower endoscopic procedures.^{3–8}

Most previous colonoscopy satisfaction studies were designed in a top-down

manner, where researchers decided upon the items in the questionnaires. These items may not necessarily reflect patients' concerns with the procedure but merely represent what doctors believe to contribute to patient satisfaction. For example, a study investigating health concerns among children with inflammatory bowel disease (IBD) showed that paediatricians' views of what is important differed significantly from concerns stated by the children themselves.¹⁰ Several other studies have also demonstrated discrepancies between doctors' and patients' beliefs on health-related matters.^{11–13} To obtain a comprehensive picture of which aspects are decisive contributors to patient satisfaction, patients should be included in suggesting items.

We aimed to explore differences in patients' and doctors' beliefs on the relative importance of patient-generated items for patient satisfaction with the colonoscopy procedure. We asked colonoscopy patients rate the extent to which they felt each of a list of 55 issues-of-concern contributed to their satisfaction with the colonoscopy procedure. In parallel, we had endoscopists rate the importance of these same issues-of-concern from a patient perspective—that is, they were invited to rate these items as they believed patients would rate them. We then evaluated differences in importance scores between patients and endoscopists and hypothesised that the importance ratings of patients would differ from the importance ratings assigned by endoscopists.

Methods

Questionnaire design

The questionnaire was designed in three steps. First, focus group interviews with colonoscopy patients who had undergone at least one colonoscopy in the past were organised to determine the items to be included in the questionnaire. We identified four separate patient groups and invited six participants from each group: patients with IBD, patients with Lynch syndrome, patients with familial adenomatous polyposis and patients who had undergone a colonoscopy in a faecal occult blood test-based colorectal cancer screening pilot. Patients were contacted for participation in the focus group sessions through our hospital and through patients associations. In the focus group sessions the participants were asked to elaborate on their experience with colonoscopy procedures and to list factors they felt were important contributors to their satisfaction with the procedure. No treating doctors were present at the focus group session, creating a safe environment. The transcripts of the focus group sessions were reviewed and an item pool of topics mentioned in the focus groups was compiled. These issues were rephrased as a list of items. This list was then presented to a number of colonoscopy experts, who made minor corrections to improve phrasing and clarity of the items. This resulted in a questionnaire of 55 items, covering the complete colonoscopy procedure, and

including items on information, communication, procedural issues, physical environment, follow-up after the colonoscopy and accessibility to hospital staff.

Two versions of the final questionnaire were designed: a patient questionnaire and an endoscopist questionnaire. In the patient questionnaire, participants were asked to rate each item, expressing the extent to which they felt the specific item contributed to their satisfaction with the colonoscopy procedure. An example of the items in this questionnaire is: 'How important is being involved in the choice for sedation to you?'. In the endoscopist version of the questionnaire, endoscopists were asked to rate each of the same set of items, expressing the extent to which they believed patients would rate the corresponding item. For this purpose, the items were rephrased. The sedation example given previously was rephrased as 'How important do you think being involved in the choice for sedation is to patients?'. All items could be scored on a five-point Likert scale of importance, anchored at 1 ('not at all important') and 5 ('very important').

In addition to the importance items, we recorded information on patients' age and sex, their indication for colonoscopy and whether or not sedation was given. We asked endoscopists information about their age and sex, about the number of colonoscopies they had performed, the number of years they had been performing colonoscopies and the type of hospital that employed them (teaching vs regional).

Study population and setting

Study setting

The study was conducted in the endoscopy department of the Academic Medical Centre in Amsterdam, The Netherlands. The Academic Medical Centre is a tertiary teaching hospital which also serves a local community. In this hospital, an average number of 120 colonoscopies are performed each month. Before a colonoscopy, all patients are seen at the outpatient clinic where they are informed about the procedure and possible risks and complications. Colonoscopies are routinely performed under conscious sedation using fentanyl 100 µg and midazolam 5 mg. Within the endoscopy unit there is a recovery room where patients can recover from sedation after colonoscopy and before going home.

Patients

In June and November 2008, consecutive patients who had undergone a scheduled colonoscopy were invited to the questionnaire study on the day of the colonoscopy procedure. Dutch-speaking patients who were at least 18 years of age were eligible. Cognitive impairment preventing questionnaire completion was an exclusion criterion. Recruiting stopped once 120 patients had agreed to participate.

Endoscopists

Endoscopists employed in hospitals in the Amsterdam region of The Netherlands were additionally invited

to the study. Only endoscopists currently performing colonoscopies were eligible for participation.

Questionnaire administration

Patients were asked to complete the questionnaire after recovery from sedation and before leaving the hospital. Patients were considered recovered from sedation if they could carry on a normal conversation. According to Dutch guidelines no institutional review board approval was needed because the study was carried out as part of a satisfaction survey. The endoscopist version of the questionnaire was sent by post and could be returned in a postage-free envelope.

Data analysis

Mean importance scores were calculated for each item for patients and for endoscopists separately. Items were then ranked according to the mean importance score by patients. We performed a two-way repeated-measures analysis of variance to analyse whether there were systematic differences in scoring between patients and endoscopists (eg, patients gave systematically higher or lower importance scores than endoscopists) and to analyse whether importance scores differed between items (ie, items were not all scored as equally important). In addition, we looked at the interaction between groups and items, to evaluate whether importance scores differed between patients and endoscopists.

If the results of the analysis of variance showed a statistically significant interaction effect, we summarised absolute differences in mean importance scores between patients and endoscopists for each of the items. In a next substep, we identified all items that were scored differently by endoscopists and patients. Differences in mean importance scores for each item were tested for statistical significance using the Student *t* test statistic. In all significance tests we used a 0.05 α level to indicate statistical significance. Data were analysed using SPSS version 18.0.

Results

Patient characteristics

Of 120 patients who underwent a scheduled colonoscopy in June and November 2008, 111 persons were eligible for participation. Seven patients had to be excluded because of an inability to understand Dutch and two patients because of cognitive impairment. A total of 69 patients (62%) completed the questionnaire. Reasons for non-participation were patient refusal (13%), logistic (72%) or unspecified (15%). Thirty-two participants (46%) were men. Mean age was 54 years. Most patients underwent a colonoscopy after referral by their general practitioner (20; 29%). Other commonly occurring indications were IBD (12; 17%) and adenoma and/or cancer surveillance (12; 17%). Thirty-six patients (52%) had had a prior colonoscopy. Sixty-six patients (96%) reported received sedation during the procedure.

Endoscopist characteristics

Fifty endoscopists were sent a questionnaire, which was returned by 34 (68%). Their mean age was 44 years. Half of the endoscopists were employed in a teaching hospital and 15 (44%) in a regional hospital. Two endoscopists did not provide information on the type of hospital in which they were employed. Participating endoscopists had been performing colonoscopies for on average 12 years (range 1–38); the mean number of colonoscopies per week was 11 (range 2–35).

Top 10 items with highest importance scores by patients

The 10 items that received the highest mean importance scores by patients are shown in table 1 (rank number in superscript behind the mean importance score by patients). Two of these items pertained to personal treatment of the endoscopist towards the patient (items 49 and 52). Four items concerned the information provision towards patients (items 3, 12, 39 and 47). Three items were about the continuity of care (items 18, 23, 44). One additional item that could not be grouped into any of the previous three categories was present in the patient top 10 (item 13).

Differences in importance scores

No structural difference was seen in response tendency between patients and endoscopist ($p=0.59$)—that is, patients did not give systematically higher or lower importance scores than endoscopists. As expected, not all 55 items were scored as equally important ($p<0.0001$). Our hypothesis that endoscopists would rate the importance of items significantly differently from patients was confirmed by a statistically significant interaction effect ($p<0.0001$).

Table 1 shows the mean importance score for each item by patients and by endoscopists and the difference between these mean importance scores. Items are ranked according to the magnitude of the difference (largest to smallest) and the corresponding *p* value of the significance of the difference is also provided. Thirteen items received significantly different important scores from patients than from endoscopists. For five of these items (1, 2, 5, 24 and 38) mean scores for patients and endoscopists were on opposite sides of the centre of the five-point importance scale. Below, we describe these differences in more detail.

Items for which endoscopists underestimated the importance in comparison with patients

Seven items received significantly lower scores from endoscopists than from patients (table 1). Three items concerned the involvement of patients in decisions surrounding the colonoscopy procedure (items 1, 2 and 13). Two additional items pertained to the information provision (items 3 and 12). Endoscopists also underestimated the importance of the feeling of uncertainty about the level of bowel cleanliness (item 10) and a comfortable temperature (item 11).

Table 1 Mean importance scores of the complete item list by patients and by endoscopists, and significance of the difference between these mean importance scores (ranked according to magnitude of the difference)

Item	Item No	Mean importance score by patients*	Mean importance score by endoscopists†	Difference in mean importance score	p Value
Being involved in the timing of the colonoscopy procedure (morning/afternoon)	1	3.80	2.65	−1.15	<0.001
Being involved in the choice of the type of bowel preparation	2	3.72	2.66	−1.06	<0.001
Ease of reaching a doctor for substantive questions	3	4.41 ¹⁰	3.57	−0.84	<0.001
Performance of the colonoscopy by one's treating doctor	4	3.36	4.17	0.81	0.003
Absence from work owing to the bowel preparation	5	2.58	3.34	0.76	0.007
Pain experienced during the colonoscopy	6	3.99	4.71 ³	0.73	<0.001
Abdominal pain/cramps due to the bowel preparation	7	3.37	4.09	0.71	0.001
Nausea/vomiting due to the bowel preparation	8	3.56	4.26	0.70	0.001
Being informed beforehand if one's treating doctor cannot perform the colonoscopy	9	3.60	4.29	0.68	0.009
Uncertainty about the level of cleanliness of the bowel	10	3.91	3.26	−0.66	0.006
Temperature in the examination room	11	3.75	3.17	−0.58	0.01
Discussion of risks and possible complications of the colonoscopy beforehand	12	4.51 ⁵	3.97	−0.54	0.002
Being involved in the choice whether or not sedation is given	13	4.54 ⁴	4.06	−0.48	0.03
Worries about not reaching a bathroom on time while taking the bowel preparation (eg, in public transport)	14	3.45	3.91	0.46	0.08
Feeling of being in control	15	3.97	4.40	0.43	0.02
Volume of bowel preparation one is required to drink	16	4.07	4.50 ¹⁰	0.43	0.01
Information consultation with endoscopist before the colonoscopy	17	4.25	3.85	−0.39	0.08
Ease of reaching one's treating doctor in case of emergency	18	4.64 ²	4.26	−0.39	0.16
Attention to privacy during the procedure (eg, covering up)	19	3.71	4.09	0.38	0.11
Worries about keeping the bathroom occupied during the preparation phase	20	2.38	2.74	0.35	0.22
Attention to one's emotions during the colonoscopy ('are you feeling anxious?')	21	3.71	4.06	0.35	0.14
Clear explanation on the duration and purpose of the stay in the recovery room after the procedure	22	3.92	3.63	−0.30	0.18
Feeling of trust towards one's treating doctor	23	4.45 ⁷	4.74 ²	0.29	0.04
Disruption of normal daily activities due to having to take the bowel preparation	24	2.93	3.20	0.28	0.31
Confidence that one's treating doctor is there when needed	25	4.34	4.60 ⁶	0.26	0.15
Clear instructions on how to use the bowel preparation	26	4.03	3.77	−0.26	0.26
Encouraging guidance during the procedure (eg, 'you are doing well'; 'we are almost done')	27	3.94	4.17	0.23	0.28
Intrusion of unknown people during the procedure	28	3.68	3.88	0.21	0.45
Waiting time on the day of the colonoscopy	29	4.10	3.91	−0.19	0.37
Physical environment of the colonoscopy room (comfort of the examination table, scent, light intensity)	30	3.59	3.40	−0.19	0.45
Atmosphere of the recovery room (cup of tea, biscuit, small talk)	31	3.65	3.83	0.18	0.43
Being asked beforehand if it is okay if unknown other people are present during the colonoscopy	32	3.91	3.74	−0.18	0.48
Clarity about follow-up plans before leaving the hospital	33	4.38	4.54 ⁷	0.16	0.29
Clear explanation of what to expect after having taken the bowel preparation	34	4.33	4.17	−0.16	0.38
Chapped perianal skin due to the bowel preparation	35	3.37	3.23	−0.14	0.59

(Continued)

Table 1 (Continued)

Item	Item No	Mean importance score by patients*	Mean importance score by endoscopists†	Difference in mean importance score	p Value
Clear explanation of the reason why one has to undergo a colonoscopy	36	4.37	4.50 ⁹	0.13	0.49
Privacy while discussing the colonoscopy results	37	4.30	4.17	−0.13	0.52
Presence of a family member in the colonoscopy room for support	38	2.96	3.09	0.13	0.65
Being provided with preliminary colonoscopy results before leaving the hospital	39	4.47 ⁶	4.60 ⁵	0.13	0.41
Explanation that escape of air from the anus is a normal consequence of the procedure	40	3.87	3.97	0.10	0.60
Taste of the bowel preparation	41	4.10	4.00	−0.10	0.65
Ease of reaching the endoscopy ward for questions on the bowel preparation	42	4.21	4.11	−0.10	0.60
Being warned in advance if a painful moment is to be expected	43	4.24	4.14	−0.10	0.64
Having one treating doctor who knows all about one's medical history	44	4.45 ⁸	4.37	−0.08	0.61
Quality of the information leaflet	45	4.33	4.26	−0.08	0.67
Ease of reaching the treating doctor for non-urgent matters	46	3.95	4.03	0.08	0.65
Clear explanation beforehand of what is to be expected during the colonoscopy procedure	47	4.45 ⁹	4.51 ⁸	0.07	0.69
Knowing in advance who is going to perform the procedure	48	3.32	3.26	−0.06	0.79
Being treated with respect by the performing endoscopist	49	4.74 ¹	4.80 ¹	0.06	0.61
Knowing who is who in the colonoscopy room: did everyone present introduce him/herself?	50	3.75	3.71	−0.04	0.87
Duration of the waiting time until the colonoscopy appointment	51	4.32	4.29	−0.02	0.90
Being treated in a personal manner and therefore not feeling as one of many	52	4.62 ³	4.60 ⁴	−0.02	0.87
Being checked up on regularly during the colonoscopy (eg, 'are you still doing okay?')	53	4.18	4.20	0.02	0.92
The taking of ample time for the procedure (not too hastily)	54	4.31	4.31	0.01	0.98
Short face-to-face conversation with the performing endoscopist before leaving the hospital	55	4.37	4.37	0.00	0.99

*The 10 items that received the highest mean importance scores by patients are marked with the corresponding rank number (1 to 10) in superscript.

†The 10 items that received the highest mean importance scores by endoscopists are marked with the corresponding rank number (1 to 10) in superscript.

Items for which endoscopists overestimated the importance in comparison with patients

Ten items received significantly higher importance scores from endoscopists than from patients. These items were about the level of pain (item 6), the volume of bowel preparation (item 16), the abdominal pain/cramps and nausea and vomiting (items 7 and 8), the absence from work (item 5), worries about not being able to reach a bathroom (item 14) and the feeling of being in control (item 15). Endoscopists also overestimated the importance of the role of one's treating doctor (items 4, 9 and 23).

Discussion

In our comparison of the views of patients and endoscopists on the relative importance of issues that contribute to a satisfactory colonoscopy procedure, we observed that endoscopists' perception differed significantly from that of patients. Endoscopists expected patients to place more emphasis on physical discomfort, such as pain during the procedure and abdominal complaints associated with the bowel preparation, while they expected less weight to be placed on the importance of involving patients in decision-making and of providing them with

adequate information on, for example, possible risks and complications.

One of the strengths of this study is the close involvement of patients in the design of the questionnaire. We used input from a heterogeneous group of colonoscopy patients to determine the questionnaire content, and thus the chance of overlooking relevant concerns was minimised. A possible threat to the external validity of our study results lies in the fact that data were collected at a single centre, which was a tertiary teaching hospital. The outcomes of this study might therefore not be representative for the entire group of colonoscopy patients. However, this could only have influenced the results of the importance ratings of the items and not the item generation, since patients from multiple hospitals took part in the focus groups that were used to determine the questionnaire content.

A second limitation is that approximately one-third of the patients who underwent a colonoscopy during the study period did not complete the questionnaire. Unfortunately, we do not have data on the demographics and/or colonoscopy procedure of these patients so we cannot exclude the possibility of some form of selection bias. Since the most common reasons for non-completion appeared to be logistic issues, such as patients being in a hurry to leave the hospital, or the research assistant being busy with another patient, large differences between participants and non-participants are unlikely.

A final limitation is that patients were asked to complete the questionnaire directly after the procedure. Although we waited until they were fully recovered from sedation, this might have influenced the results. Several studies have shown that at follow-up appointments patients recall experiencing more pain than directly after the procedure.^{3 14} On the other hand, patients completed the questionnaire before the discussion of the results, which might have prevented influencing of their perception.

Our study is not the first to describe discrepancies in patients' and doctors' views on health-related matters. In a study by Loonen and colleagues, consecutive children with IBD attending an outpatient department were asked to rate on a Likert-scale the importance in their lives of 96 items.¹⁰ Paediatricians were offered the same set of items and were asked to do the same, but then from the child's perspective. The authors observed little overlap between items that children found most important and items that doctors thought were most important to them. As in our study, paediatricians overestimated the importance of physical symptoms while they underestimated other factors important to children (in this case worries about having a chronic disease). This study, however, was not in field of endoscopy.

Yacavone and colleagues explored factors that influenced patient satisfaction with endoscopic procedures and part of their study compared patients' and doctors'

rankings of the same instrument, much in the same way as we did.⁸ The aim of their study was to analyse whether the modified Group Health Association of America-9 (mGHAA-9) patient satisfaction survey—a survey recommended for use in assessing satisfaction with endoscopic procedures by the American Society for Gastrointestinal Endoscopy⁹—covered all relevant concerns important to patients who undergo endoscopy. They added six items based on the literature to the mGHAA-9 instrument and asked both patients and doctors to rank the resulting item list from 1 to 15 in order of increasing importance. This method of prioritising items differed from our method since we asked subjects to score the relative importance of each of a list of 55 items on a Likert-scale. Yacavone and colleagues found that 11 of the 15 items were ranked significantly differently by endoscopists than by patients. Not all items that were present in their survey were present in ours and vice versa making direct comparison difficult. In accordance with our results, endoscopists underestimated the importance the doctor discussion after the procedure. In contrast to our findings, Yacavone and colleagues reported no difference in the ranking of the item that concerned adequacy of control of discomfort. In addition, several items that were not rated differently by patients and endoscopists in our study, did receive significantly different rankings in the study by Yacavone. These were the doctor's knowledge of one's medical history, waiting time before procedure, personal manner of the endoscopist and the appearance/cleanliness of the examination room. These were all ranked significantly less important by endoscopists than by patients. Finally, in accordance with our findings, no differences were seen with regard to the amount of privacy in the examination room and the adequacy of explanation of the procedure.

What causes these different views on what is important in influencing patient satisfaction? The overestimation of the importance of physical symptoms that was found in our study and also in the study assessing children's concern with IBD, might be caused because doctors have become accustomed to focusing on physical complaints and symptoms while diagnosing and treating diseases, whereas for patients the physical symptoms are just part of a larger picture that is surrounded by many uncertainties. Many of the aspects that are uncertain to patients are well known to doctors, who are used to dealing with them every day. This may be why patients want to be involved in decisions about the procedure as it might be one way of exerting some degree of control in an otherwise uncontrollable situation. Aspects of uncertainty concern patients—for instance, worries about what they are awaiting or whether or not they are going to be in any pain. Patients may value the discussion of their colonoscopy results before going home because they are worried about possible abnormalities.

Patients did not assign as much importance to the level of pain experienced as endoscopists expected, which might be because they placed more importance on items that enabled them to expect pain, such as being warned in advance if a painful part was to be expected. Endoscopists also tended to overestimate the importance of the role of a patient's treating doctor in the colonoscopy. However, the vast majority of patients assigned a lower importance score to these items than endoscopists. This might be because endoscopists tend to remember incidents in which patients were disappointed when one was unable to perform the colonoscopy. For most patients it may be more important that the person who eventually performs the colonoscopy involves them in the process and treats them with respect. In addition, doctors in general might be more focused on the technical explanation of a medical procedure and interventions than on discussing feelings and thoughts. Future studies should explore whether interventions targeting the improvement of those concerns most relevant to patients succeed in increasing overall patient satisfaction levels with the colonoscopy procedure. Such interventions should focus on adequately informing patients about the procedure and accompanying risks and complications and on providing them with practical instructions on where to turn if they have additional questions. Furthermore, during the information consultation before the colonoscopy, patients should be actively involved in the decision-making process by discussing options for sedation, bowel preparation and timing of the procedure.

In conclusion, endoscopists do not seem to have a correct perception of which items are important contributors to patient satisfaction with the colonoscopy procedure. They overemphasise the relative importance of pain and discomfort, and underestimate the value of clear communication and shared decision-making. Improving satisfaction with the colonoscopy procedure might increase the willingness of patients to undergo the procedure and thereby the quality of care.

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