

A prospective audit of patient experiences in colonoscopy using the Global Rating Scale: A cohort of 1187 patients

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V de Jonge, J Sint Nicolaas, EA Lalor, et al. A prospective audit of patient experiences in colonoscopy using the Global Rating Scale: A cohort of 1187 patients. *Can J Gastroenterol* 2010;24(10):607-613.

BACKGROUND: The Global Rating Scale (GRS) comprehensively evaluates the quality of an endoscopy department, providing a patient-centred framework for service improvement.

OBJECTIVE: To assess patient experiences during colonoscopy and identify areas that need service improvement using the GRS.

METHODS: Consecutive outpatients undergoing colonoscopy were asked to complete a pre- and postprocedure questionnaire. Questions were based on GRS items and a literature review. The preprocedure questionnaire addressed items such as patient characteristics and information provision. The postprocedure questionnaire contained questions regarding comfort, sedation, the attitude of endoscopy staff and aftercare.

RESULTS: The preprocedure questionnaire was completed by 1187 patients, whereas the postprocedure part of the questionnaire was completed by 851 patients (71.9%). Fifty-four per cent of patients were first seen in the outpatient clinic. The indication for colonoscopy was explained to 85% of the patients. Sixty-five per cent of the patients stated that information about the risks of colonoscopy was provided. Sedation was used in 94% of the patients; however, 23% judged the colonoscopy to be more uncomfortable than expected. Ten per cent of patients rated the colonoscopy as (very) uncomfortable. Preliminary results of the colonoscopy were discussed with 87% of patients after the procedure. Twenty-one per cent of the patients left the hospital without knowing how to obtain their final results. Being comfortable while waiting for the procedure (OR 9.93) and a less uncomfortable procedure than expected (OR 2.99) were important determinants of the willingness to return for colonoscopy.

CONCLUSIONS: The present study provided evidence supporting the GRS in identifying service gaps in the quality of patient experiences for colonoscopy in a North American setting. Assessing experiences is useful in identifying areas that need improvement such as the provision of pre- and postprocedure information.

Key Words: Colonoscopy; Patient experiences; Patient satisfaction; Prospective study; Quality assurance

Colonoscopy is the most commonly used and most accurate procedure to image the large bowel (1). The demand for colonoscopy has increased over the past decade, largely for the purpose of colorectal cancer screening and the surveillance of adenomas (2,3).

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Received for publication December 1, 2009. Accepted February 8, 2010

La vérification prospective de l'expérience de coloscopie de patients au moyen de l'échelle d'évaluation globale : Une cohorte de 1 187 patients

HISTORIQUE : L'échelle d'évaluation globale (ÉEG) évalue tous les aspects de la qualité d'un service d'endoscopie et fournit un cadre d'amélioration des services axé sur le patient.

OBJECTIF : Évaluer l'expérience des patients pendant la coloscopie et repérer les secteurs où les services doivent être améliorés au moyen de l'ÉEG.

MÉTHODOLOGIE : Les chercheurs ont demandé à des patients ambulatoires consécutifs qui devaient subir une coloscopie de remplir un questionnaire avant et après l'intervention. Les questions s'inspiraient des éléments de l'ÉEG et d'une analyse bibliographique. Le questionnaire avant l'intervention portait sur des points comme les caractéristiques des patients et la transmission d'information. Le questionnaire après l'intervention contenait des questions sur le confort, la sédation, l'attitude du personnel d'endoscopie et les soins après l'intervention.

RÉSULTATS : Le questionnaire avant l'intervention a été rempli par 1 187 patients, tandis que celui après l'intervention l'a été par 851 patients (71,9 %). Cinquante-quatre pour cent des patients ont d'abord été vus en consultations externes. L'indication de coloscopie a été expliquée à 85 % des patients. Soixante-cinq pour cent des patients ont déclaré avoir été informés des risques de la coloscopie. La sédation a été utilisée chez 94 % des patients, mais 23 % ont jugé la coloscopie plus désagréable qu'ils s'y attendaient. Dix pour cent des patients ont classé la coloscopie comme (très) désagréable. Les résultats provisoires de la coloscopie ont été abordés avec 87 % des patients après l'intervention. Vingt et un pour cent des patients ont quitté l'hôpital sans savoir comment obtenir les résultats définitifs. Le fait d'être à l'aise en attendant l'intervention (RRR 9,93) et une intervention moins désagréable que prévu (RRR 2,99) étaient des déterminants importants de la volonté de subir une nouvelle coloscopie.

CONCLUSIONS : La présente étude a fourni des données étayant l'ÉEG pour déterminer les lacunes de service dans l'expérience de coloscopie des patients en milieu nord-américain. Il est utile d'évaluer les expériences pour déterminer les secteurs à améliorer, tels que la transmission d'information avant et après l'intervention.

Simultaneously, interest in quality assurance (QA) has increased (1,4). Several studies have addressed factors that influence the technical quality of colonoscopy including female sex, poor bowel preparation, lower endoscopist skills, and a history of abdominal or pelvic surgery (5,6).

TABLE 1
Global Rating Scale domains

Clinical quality	Quality of patient experience	Training	Workforce
Informed consent and information	Equality of access and equity of provision	Environment and training opportunity	Skill mix review and recruitment
Complications/safety	Timeliness	Endoscopy trainers	Orientation and training
Comfort	Booking and choice	Assessment/appraisal	Assessment/appraisal
Quality procedure	Privacy and dignity	Equipment and educational materials	Staff care
Appropriateness	Aftercare		Involve staff for development service
Reporting	Ability to provide feedback for service		

Patient experiences are also important to the overall quality assessment of the procedure and have been suggested as quality indicators for colonoscopy (7). Several studies have identified variables that are associated with increased levels of discomfort during a colonoscopy such as higher socioeconomic status, the presence of psychological distress and previous hysterectomy (8,9). High tolerance and satisfaction are required for patients to be compliant with medical care (10). Dissatisfied patients are more likely to change physicians and to engage in litigation (11-14).

In 2004, the results of an audit conducted in the United Kingdom (UK) (15) demonstrated an urgent need to improve the quality of endoscopy. For that purpose, a comprehensive program was developed to evaluate and improve all aspects of endoscopy and has become known as the Global Rating Scale (GRS) (16). The GRS is a patient-centred QA program that provides objective measures for the overall quality of the endoscopic service. Acceptance of the GRS by endoscopy units in the UK has been high, and improvements in quality have been achieved (17).

The GRS has four main domains: 'Clinical quality', 'Quality of patient experience', 'Training' and 'Workforce' (16). Each domain consists of different items, which are presented in Table 1. Items were discussed and created at several national meetings in which input was provided by health care providers, patient groups and others. Recently, efforts have been made to adopt the GRS outside of the UK, including Canada (18).

The aim of the current study was to evaluate several items within the 'Quality of patient experience' domain of the GRS outside the UK, in a North American setting.

METHODS

The present prospective cohort study was performed in the endoscopy departments of the following four hospitals in Edmonton, Alberta: The University of Alberta Hospital (UAH), Royal Alexandra Hospital (RAH), Misericordia Community Hospital (MH) and Grey Nuns Community Hospital (GNH). The study protocol was submitted to the Health Research Ethics Board of the UAH and RAH, and the Ethics Board of the Caritas Health Group of the MH and GNH. Both boards deemed that the study fell under the umbrella of QA projects and, subsequently, research ethics approval was granted.

Patients

Consecutive patients undergoing colonoscopy in one of the four hospitals included in the present study were asked to participate. Patients were enrolled between May and August 2008. Verbal consent was obtained from all patients participating in the present study. The main inclusion criterion was that

patients were scheduled to undergo an outpatient colonoscopy. Exclusion criteria consisted of the following: patients who did not consent to participate, were not able to speak or read English, or had a medical condition that made it difficult to complete the questionnaire.

Colonoscopies were performed by gastroenterologists and fellows. No information regarding the specifics of sedation (neither drugs nor dosage) used during the procedures was collected.

Questionnaire

A questionnaire that was used in the UK, which contained the relevant items of the GRS, was adopted for the present study (Figure e1) (16). The items in the GRS were developed based on focus group discussions with all stakeholders of endoscopy, including patients. Some questions derived from the previously validated modified Group Health Association of America nine-item survey (14) were incorporated to address all of the established domains that may influence patient experiences. Because the modified Group Health Association of America nine-item survey does not incorporate questions regarding pain tolerance, acceptance and embarrassment, questions based on the 'Health Belief Model' (19) were also included. The following aspects were assessed: accessibility and timeliness, informed consent and information, interpersonal skills of staff, privacy and dignity, comfort and discharge.

First, the questionnaire was pretested at the UAH endoscopy outpatient department. During the pretesting phase, 30 patients were asked to complete the pre- and postprocedure questionnaire. These patients were subsequently interviewed by the investigators to evaluate the clarity of the tool. Input from health care professionals was also obtained during this period. After feedback, the final questionnaire was designed. Patients completed the first part of the questionnaire before their colonoscopy while waiting in the preprocedure area. Patients received a postage-paid, pre-addressed envelope and were asked to complete the postprocedure questionnaire at home within three days and return it by mail.

Statistical analysis

Analyses were performed using SPSS version 15.0.1 (SPSS Inc, USA). Categorical data differences between hospitals were analyzed using χ^2 tests. Numerical data were analyzed using one-way ANOVA. To determine differences in nominal data between hospitals, the Kruskal-Wallis test and Mann-Whitney U test were used. A two-sided P<0.05 was considered to be statistically significant.

Multivariate logistic regression analysis was used to identify associations among the willingness to return for colonoscopy, overall comfort, acceptance and the following factors: sex, age, body mass index, specialist consultation before colonoscopy,

TABLE 2
Patient characteristics

	Overall*, n (%)	Hospital, %			
		UAH	RAH	MH	GNH
Completed preprocedure questionnaire	1187 (100)	36.3	28.2	16.7	18.8
Sex, male†	509 (43.1)	47.6	41.4	41.8	38.2
Age, years (mean ± SD)‡ § ¶	55.7±15.0	53.3	56.9	58.1	57.1
History of previous bowel investigation (more than one option can apply)	853 (73)	73.4	75.2	74.0	67.9
Colonoscopy	656 (59.6)	59.5	61.8	59.6	56.4
Sigmoidoscopy	190 (25.4)	24.8	31.9	20.7	21.0
History of abdominal or pelvic surgery‡ **	457 (40.7)	37.2	46.4	43.1	36.2
Indication for procedure					
Family history of colorectal cancer†‡ ¶¶	263 (22.9)	19.4	29.1	13.5	28.7
Personal history of colorectal cancer and/or polyps	152 (13.3)	11.5	14.2	13.0	15.3
Screening colonoscopy‡ § ¶	67 (5.8)	9.1	5.2	3.1	3.2
Rectal bleeding¶	19 (17.0)	13.3	17.0	19.2	22.2
Abdominal pain† ¶¶	111 (9.7)	11.3	7.6	15.0	5.1
Inflammatory bowel disease‡ § ¶	185 (16.1)	22.6	13.3	15.0	9.3
Other† §	173 (15.1)	12.8	13.6	21.2	16.2

*Totals differ due to missing values; P<0.05: †RAH versus MH; ‡UAH versus RAH; §UAH versus MH; ¶UAH versus GNH; **RAH versus GNH; ¶¶MH versus GNH.
GNH Grey Nuns Community Hospital; MH Misericordia Hospital; RAH Royal Alexandra Hospital; UAH University of Alberta Hospital, Edmonton, Alberta

TABLE 3
Results from the preprocedure questionnaire

	Overall*, n (%)	Hospital, %			
		UAH	RAH	MH	GNH
Specialist seen as outpatient before colonoscopy†‡ ** ¶¶	634 (54.0)	40.3	54.2	53.3	80.5
Booked in a timely fashion†‡ **	246 (77.6)	84.4	67.9	70.6	83.6
Offered a choice of dates or times**	427 (37.0)	37.9	32.3	36.3	42.8
Want more choice for dates or times†	418 (38.8)	36.1	43.5	37.4	38.5
Information sheet received†‡ ¶¶ ¶¶	1046 (89.3)	94.8	79.5	87.8	95.0
Explanation of what colonoscopy involved¶¶ **	906 (77.8)	81.5	70.4	80.4	79.4
Explanation of indication of colonoscopy	982 (84.7)	85.1	84.4	82.8	86.3
Mentioning complications (any)†‡ § ¶¶	729 (65.1)	75.2	62.0	49.7	63.7
Perforation†‡ § ¶¶	660 (59.0)	70.1	53.0	46.4	57.1
Bleeding†‡ § ¶¶	652 (60.3)	71.6	56.0	44.8	58.4
Missing cancer†‡ § ¶¶	478 (44.9)	57.7	37.4	32.0	42.8
Risk of sedation†‡ §	555 (53.5)	65.0	49.5	41.0	49.2

*Totals differ due to missing values; P<0.05: †UAH versus RAH; ‡UAH versus MH; §UAH versus GNH; ¶UAH versus GH; ¶¶RAH versus MH; **RAH versus GNH; ¶¶MH versus GNH.
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receipt of an information sheet before colonoscopy, comfort in the waiting area, excessive delay before or after the colonoscopy, adequate time in the endoscopy room, a colonoscopy that was more uncomfortable than expected, discussion of preliminary results and embarrassment during the colonoscopy.

For this purpose, the outcome variables were transformed into binary variables (patients who were either [very] satisfied or willing to return, or somewhat or not [very] satisfied or willing to return), as was previously performed by others (20).

RESULTS

Preprocedure questionnaire

Patient characteristics: A total of 1187 patients (43.1% men, mean age 56 years) completed the preprocedure questionnaire during the study period. Tables 2 and 3 summarize the patient characteristics and results. Overall, 656 patients (59.6%) had undergone a previous colonoscopy. Patient characteristics were similar among the hospitals.

Booking procedure: Before undergoing colonoscopy, 634 patients (54.0%) had seen the specialist in an outpatient setting and 541 (46.0%) were directly referred for the procedure without previous consultation of the specialist. Among 442 patients who underwent first-time colonoscopy, 218 (49.3%) had not consulted with the physician before the procedure in the outpatient clinic. The rate of patients who had a preprocedure visit with their physician differed significantly among hospitals, with rates ranging from 40.3% to 80.5% (P<0.01).

A choice of date and time for the procedure was offered to 427 patients (37%).

Information provision: Before colonoscopy, 1048 patients (89.3%) received an information sheet (range among hospitals 79.5% to 95%; P<0.01). In addition, before the actual procedure, the endoscopist or nurse explained the details of the procedure to 906 patients (77.8%).

While waiting for colonoscopy, the indication for the procedure was not known or could not be recalled by 177 patients (15.3%).

TABLE 4
Results from the postprocedure questionnaire

		Hospitals (%)			
	Overall*, n (%)	UAH	RAH	MH	GNH
Response rate	851 (71.7)	71.9	77.0	60.6	73.1
Admission					
Journey well coordinated	831 (98.6)	98.0	98.8	100.0	98.1
Excessive delay in admission to procedure time†	165 (19.7)	15.8	19.4	22.7	25.2
Procedure					
Discouraged from having sedation ‡ § ¶	46 (5.5)	8.1	2.0	6.8	5.0
Sedation given ¶	756 (94.0)	93.8	92.1	97.4	94.9
Choice offered for sedation ‡ ¶	195 (24.0)	30.7	16.5	27.8	20.5
Courteous doctor	831 (99.5)	99.7	99.2	99.2	100.0
Courteous nurses	833 (99.5)	98.7	100.0	100.0	100.0
More uncomfortable than first anticipated	189 (22.7)	23.3	23.5	18.5	23.5
Treated with respect	788 (99.6)	99.7	99.1	100.0	100.0
Discharge					
Preliminary results discussed after procedure†‡ §	707 (86.9)	93.4	82.3	85.7	83.0
Know how to get the final results ‡ ¶ **	641 (78.9)	82.9	70.2	84.0	81.6
Time to discharge too long	37 (4.5)	5.7	4.0	5.0	2.5
Aftercare information sheet†‡ § ¶ ** ††	710 (87.3)	90.6	84.2	74.1	96.2
Know what to do if problems come up§ ¶ ††	736 (92.0)	93.4	92.2	82.9	95.5

*Totals differ due to missing values; P<0.05: †UAH versus GNH; ‡UAH versus RAH; §UAH versus MH; ¶RAH versus MH; **RAH versus GNH; ††MH versus GNH. GNH Grey Nuns Community Hospital; MH Misericordia Hospital; RAH Royal Alexandra Hospital; UAH University of Alberta Hospital, Edmonton, Alberta

TABLE 5
Overall patient experiences of colonoscopy

	(Strongly) disagree	Neutral	(Strongly) agree
Comfortable (n=819)	81 (9.9)	147 (17.9)	591 (72.2)
Acceptable (n=822)	21 (2.6)	53 (6.4)	748 (91.0)
Embarrassing (n=829)	753 (90.8)	61 (7.4)	15 (1.8)
Willing to return (n=826)	43 (5.2)	90 (10.9)	693 (83.9)

Data presented as n (%)

When the analysis was stratified according to preprocedural outpatient visits, 61 patients (9.8%) who had previously visited the outpatient clinic did not know the indication for their colonoscopy compared with 116 patients (21.8%) who had not consulted with their specialist before the procedure (P<0.01).

Overall, any of the complications (Table 3) were mentioned to 729 patients (65.1%; range among hospitals 49.7% to 75.2%; P<0.01), and 433 patients (41%) recalled that they were informed about all four complications assessed in this questionnaire (range among hospitals 29.6% to 52.1%; P<0.01). Patients who consulted with their specialist before colonoscopy recalled more often that any of the risks of complications were mentioned to them compared with patients who were directly referred (167 [27.7%] versus 223 [43.4%]) (P<0.01). Among 999 patients who received an information sheet, 326 patients (32.6%) were not aware of the potential complications of colonoscopy, compared with 63 (53.8%) of the 117 patients who did not receive an information sheet (P<0.01).

If patients received both an information sheet and a pre-colonoscopy consultation, they retained more information about complications than when information provision was limited to one of these methods or when they received no information whatsoever (394 [73.4%] versus 330 [57.3%]; P<0.01).

Postprocedure questionnaire

A total of 851 patients completed the postprocedure questionnaire (response rate 71.7%). The results of the postprocedure questionnaire are summarized in Tables 4 and 5.

Admission and waiting before procedure: Almost all patients (824 [97.3%]) were comfortable waiting for their procedure in the preprocedure area. However, 165 of the patients (19.7%) believed there was an excessive delay before entering the endoscopy room. Virtually all patients (842 [99.5%]) signed an informed consent form before undergoing the procedure.

Procedure: According to patient reports, sedation was used in 756 procedures (94%). A choice to receive sedation was recalled to be offered by 195 patients (24%). Among the patients who were not offered a choice, 128 (22.3%) would have preferred to have a choice.

Acceptability of the procedure is shown in Table 5. Colonoscopy was rated as (very) comfortable by 591 patients (72.2%), and 748 found the burden (very) acceptable (91.0%). However, 189 patients (22.7%) rated the experience of the colonoscopy as more uncomfortable than expected (Table 4). Patients who were seen in a precolonoscopy consultation by the specialist rated the experience of the colonoscopy as more uncomfortable than anticipated more frequently (n=114 [26.1%]) than patients who were directly booked for colonoscopy (n=74 [18.9%]) (P<0.05). There was no difference between patients who underwent their first colonoscopy and those who underwent a previous colonoscopy.

If necessary, the majority of patients (693 [83.9%]) were (absolutely) willing to return for a repeat procedure.

Discharge and aftercare: The preliminary results of the colonoscopy were discussed by the endoscopist before discharge with 707 patients (86.9%). A total of 608 patients (74.6%) stated that a written result would be (very) important. Additionally, 470 patients (58.5%) would (very much) prefer to consult with the endoscopist before discharge.

Before being discharged, 710 patients (87.3%) received an aftercare information sheet (range among hospitals 74.1% to 96.2%; $P<0.05$).

Among 93 patients who did not receive an information sheet, 26 (28%) were not aware of what to do if problems arose, as opposed to 35 of 692 patients (5.1%) who did receive an information sheet ($P<0.01$).

At discharge, 171 patients (21.1%) did not know how they would receive their final results. When patients received an aftercare information sheet, they knew more often how they would receive the final results (556 [80.5%] versus 67 [68.4%]; $P<0.01$).

Factors influencing patient satisfaction

The results of the multivariate logistic regression models are summarized in Table 6.

No embarrassment (OR 5.06; 95% CI 2.82 to 9.08) and a less uncomfortable procedure than expected (OR 2.80; 95% CI 1.85 to 4.24) were positively associated with being comfortable during the procedure, while younger age was negatively associated with comfort during the procedure (OR 0.99; 95% CI 0.97 to 1.00).

Furthermore, acceptance of the colonoscopy was positively associated with comfort (OR 23.44; 95% CI 8.96 to 61.28), no embarrassment (OR 3.91; 95% CI 1.76 to 8.68), an acceptable wait time to discharge (OR 3.31; 95% CI 1.01 to 10.84) and a less burdensome procedure than anticipated (OR 2.48; 95% CI 1.24 to 4.98).

The following variables were positively associated with patients' willingness to return for a colonoscopy: comfort while waiting for the procedure (OR 9.93; 95% CI 2.99 to 32.99), no embarrassment (OR 6.65; 95% CI 3.51 to 12.61), less uncomfortable procedure than anticipated (OR 2.99; 95% CI 1.80 to 4.97), an acceptable waiting time until discharge (OR 2.66; 95% CI 1.00 to 7.05), and discussion of preliminary results after the colonoscopy (OR 2.31; 95% CI 1.24 to 4.31).

DISCUSSION

Patient experience has become an important indicator in colonoscopy QA because it is a measure of patients' acceptance of the procedure and is likely a factor in compliance with follow-up recommendations (14). Our study evaluated the experiences of patients undergoing colonoscopy in four Canadian hospitals using a questionnaire based on the GRS – a comprehensive QA program developed in the UK (16). The GRS is now the accepted standard for endoscopy units in the UK that participate in the National Health Service colon cancer screening program. Acceptance of the GRS in the UK has been high; however, to date, full-length peer-reviewed publications pertaining to the GRS are lacking (17,18,21).

Overall, patient satisfaction was high for most aspects of colonoscopy; however, the present study identified areas in which improvements can be made. Patients prefer to be offered a choice for booking their procedure on a convenient date and time. In our study, only 37% of patients were offered a choice for their procedure date. Nevertheless, 77.6% of patients believed that their procedure was booked in a timely fashion. The results are similar to those reported in a French study (22) in which only 13.7% of patients responding in a telephone interview were poorly or fairly satisfied with the time they were

TABLE 6
Factors influencing patient satisfaction

	OR (95% CI)
Comfort	
No embarrassment	5.06 (2.82–9.08)
Less uncomfortable than expected	2.80 (1.85–4.24)
Younger age	0.99 (0.97–1.00)
Acceptance	
Comfort	23.44 (8.96–61.28)
No embarrassment	3.91 (1.76–8.68)
Wait time until discharge	3.31 (1.01–10.84)
Less uncomfortable than expected	2.48 (1.24–4.98)
Willingness to return for colonoscopy if necessary	
Comfortable while waiting for procedure in waiting area	9.93 (2.99–32.99)
No embarrassment	6.65 (3.51–12.61)
Less uncomfortable than expected	2.99 (1.80–4.97)
Waiting time until discharge	2.66 (1.00–7.05)
Preliminary results discussed after procedure	2.31 (1.24–4.31)

An OR of greater than 1 indicates a positive association, while an OR of less than 1 indicates a negative association

required to wait to obtain their colonoscopy appointment.

It is important for patients to understand the indication for their procedure and the risk of rare but serious complications, especially because dissatisfied patients may be more likely to engage in litigation (1,13,23,24). Several studies (25–27) have addressed ways to improve information provision such as the distribution of information leaflets, video instruction and precolonoscopy consultations. As our data show, patients appeared to be better informed about several aspects of the procedure when they had a separate outpatient visit or received an information sheet before the procedure was scheduled. This highlights the importance of ensuring that patients receive and read information pamphlets detailing the procedure, and that sufficient time is given to explain the details of the procedure.

In our study, 34.9% of patients stated that they were not aware of any of the complications when this was asked just before the procedure at the time they were waiting for their colonoscopy. This number is surprisingly high given that the information sheets of all four hospitals explicitly mention perforation and bleeding as risks, and almost all study participants (99.5%) signed an informed consent form. It is unclear whether these patients did not recall, did not read the information sheet carefully or, were indeed, not informed about the complications. Among the patients who were seen by their specialist, 27.7% stated that the complications were not mentioned, while more than 40% of those who did not have an outpatient visit were not aware of them. This is consistent with the results of a small study of 31 patients (28) that showed the benefit of a precolonoscopy outpatient consultation resulting in more information about the procedure being retained. Furthermore, our data support the rationale for a physician visit before the actual procedure combined with distributing information sheets because it results in the highest retention of information.

Our results demonstrate that colonoscopy was well tolerated by patients. This is consistent with the results of a study by Eckardt et al (29) in which 88% to 92% of patients were

willing to return for a repeat procedure. Nevertheless, in our study, 22.7% of patients found the colonoscopy to be more uncomfortable than they expected and, surprisingly, this was higher for patients who were seen by the physician in the outpatient clinic before their procedure. This was reported despite the use of conscious sedation in 94% of the procedures. Perhaps patients should be better informed about the extent of discomfort they may experience or, alternatively, physicians should be more aware of discomfort and ensure that measures are taken to mitigate excessive discomfort during the procedure. Additionally, the importance of a representative presentation of discomfort associated with the procedure that can be expected during the colonoscopy is emphasized by the results that patients were more willing to return for a procedure (OR 2.99), reported less discomfort (OR 2.80) and found the colonoscopy to be more acceptable (OR 2.48) when they experienced the colonoscopy as less uncomfortable than anticipated.

Privacy and dignity are important issues addressed by the GRS, and their importance is reflected by the results of our study demonstrating that the absence of embarrassment is positively associated with a comfortable (OR 3.22) and acceptable (OR 3.91) procedure, and the willingness to undergo a repeat procedure (OR 6.65). Ko et al (20) found that the personal manner, both from nurses and endoscopists, was of importance in patients' overall satisfaction. In our study, no direct association was found among courteous and considerate physicians or nurses and any of the outcome measures because almost none of the patients had a negative experience with the attitude of the endoscopy staff.

The GRS endorses that patients should be informed about the preliminary results and, if final results depend on further testing, such as pathology results, how these will be reported to them (16). An important finding in our study was that 21.1% of patients left the hospital without knowing how to obtain their final results. A previous study (30) showed that apart from informing the patient of the results after the procedure, it is beneficial to also provide a written result. In our study, patients who received a written and verbal report were more likely to recall the recommendations for follow-up and therapy, compared with those who only received a verbal report (72% versus 42%, respectively). Our study confirms these results because patients who received an aftercare information sheet were more aware of what to do when problems arose and were more aware of how they would receive their final results. Furthermore, patients who received the preliminary results of their procedure before they left the endoscopy unit were more often willing to return for colonoscopy (OR 2.31). This aspect of care can be easily incorporated into everyday practice.

We reported the data for the four participating hospitals separately because it highlighted the differences that may exist among hospitals that are in the same geographical region. The baseline measurements obtained in the present study provided data that can be used to improve the patient experience during colonoscopy. Our data also demonstrate that the GRS can be easily applied in a North American setting to help identify service gaps.

The present study has some limitations. First, no formal validation of the questionnaire was performed, although previously validated questions were used and the questionnaire was

pretested by patients (14). Second, some findings indicate that the parameters that were deemed to be important to doctors were not necessarily considered to be important to patients. Third, although patient groups contributed to the development of the GRS, some of the investigated items may, therefore, be less important to patient satisfaction than others. Fourth, language barriers could be an issue in patient experiences; however, we did not evaluate this in our study. The outcome of patients whose first language was not English (and were excluded from the study) may be worse. Considering the patient population, however, we suspect that the number of patients not enrolled because of language barriers was low, although we do not have formal supportive data. Fifth, the GRS accounts for the equality of access, and future studies should address the current status of information provision among these patients. Finally, we relied entirely on the information the patient provided and did not verify the data with the endoscopist or the colonoscopy report.

CONCLUSION

The results of our study show that overall patient satisfaction with colonoscopy was high; however, differences existed among the four centres, leaving room for improvement in pre- and postprocedure protocols. The GRS appeared to be an excellent tool for identifying service gaps in patient experiences during colonoscopy, which can serve as a guide for future improvement initiatives.

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University of Alberta Hospital Endoscopy Unit

Research about the patient experiences and satisfaction with colonoscopy

Study objective

Many patients undergoing colonoscopy are nervous about the procedure. We hope that patients get adequate information about their test, that they understand what it involves and why it is being done and that the procedure itself turns out to be a good experience.

The primary objective of this project is to evaluate how patients currently evaluate the quality of the entire colonoscopy process from booking, to the procedure itself and aftercare in four major hospitals in Edmonton. We are looking at ways in which we can improve the way we inform, schedule and do the actual procedure and your answers to these questions will help us decide how we best do this. It will take no more than 5-10 minutes of your time to fill out the questionnaire. The questionnaire consists of two different parts. Before you will undergo the procedure we ask you to fill out the first part and this will include some personal information. The second part should be completed one or two days after the procedure at home. You can use the stamped addressed envelope to send it back to the investigators.

This project is carried out in four hospitals: Grey Nuns Hospital, Misericordia Hospital, Royal Alexandra Hospital and University of Alberta Hospital. The Physicians involved in this project are: Dr. A. Bala, Dr. R. Fedorak, Dr. E. Lalor, Dr. B. Walters, Dr. C. Wong and Dr. Van Zanten.

The results of this study will help us in improving the colonoscopy procedure in the future. Participating in this study will not affect your colonoscopy procedure in any which way.

Confidentiality

Personal health records relating to this project will be kept confidential. Any data collected about you during this study will not identify you by name, only by your initials and a coded number. Any report published as a result of this study will not identify you by name.

We kindly ask you to answer the following questions to the best of your abilities.

Before the procedure

1. Date of birth-.....-..... (dd-mm-yyyy)	
2. What is you gender?	Male	Female
3. What is your height? ft. / cm.	
4. What is your weight? lb. / kg.	
5. Did you ever have a bowel investigation before? - Colonoscopy - Sigmoidoscopy - Barium enema - Other:	Yes	No
6. Did you ever have an abdominal or pelvic surgery before?	Yes	No
7. What is the indication for you having your colonoscopy today (please choose <i>one</i> of the options below)? <input type="checkbox"/> Family history of bowel cancer <input type="checkbox"/> Personal history of polyps / bowel cancer <input type="checkbox"/> Screenings trial (SCOPE program) <input type="checkbox"/> Rectal bleeding <input type="checkbox"/> Abdominal pain <input type="checkbox"/> Crohn's disease / ulcerative colitis <input type="checkbox"/> Other:		
8a. Did you see the specialist before colonoscopy or were you directly booked?	Specialist	Direct
8b. If you have seen the specialist before colonoscopy, was the colonoscopy scheduled in a timely fashion afterwards?	Yes	No
9a. Were you offered a choice of dates / times in which the colonoscopy was done?	Yes	No
9b. Would you have like more choice in the scheduled date of your procedure?	Yes	No
10. Did you receive an information sheet explaining in sufficient detail what is involved in having a colonoscopy?	Yes	No
11. Did a doctor or nurse discuss what the colonoscopy involved?	Yes	No
12. Did the doctor/nurse explain why the colonoscopy was being arranged (i.e. what it was looking for)?	Yes	No
13. Did the doctor/nurse discuss alternative tests or treatments (which might include doing nothing, trying some treatment without doing the procedure just to see if it helped, barium X rays or other scans) if applicable?	Yes	No
14. Did the doctor/nurse mention that there are risks of:		

- Perforation (making a hole in your bowel)	Yes	No
- Bleeding	Yes	No
- Missing a cancer	Yes	No
- Risk of sedation	Yes	No
15. Did you have the ability to ask questions?	Yes	No
16. Do you have a preference for the gender (male or female) of the doctor doing the procedure?	Yes	No

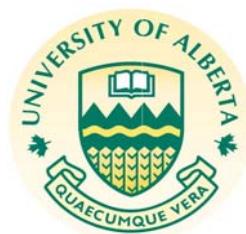
Any comments on how we could improve the service would be gratefully received. Please feel free to make any comment(s):

.....
.....
.....

In case we want to reach you to clarify or ask something about the questionnaire would you please give the best phone number (-s) where we can reach you?

During the day: (or alternative) in the evening:

Please put this part of the questionnaire in an envelope at the black box on the registration desk, or return it to one of the nurses.



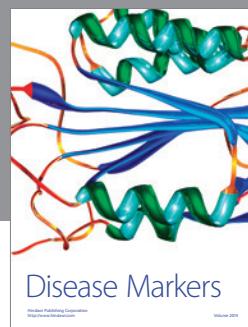
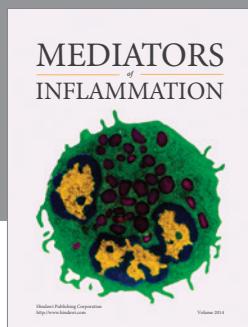
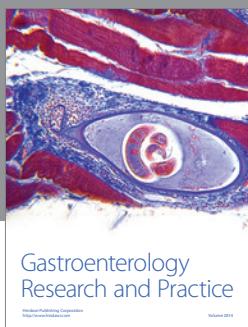
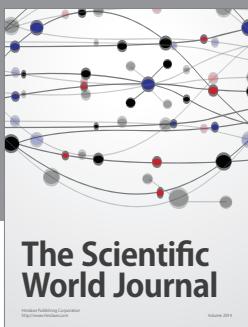
Questionnaire part 2

After your colonoscopy

- You have had a colonoscopy and completed a questionnaire before the procedure, this one is about the procedure itself and the aftercare
- Please complete this part *within 2 days* after the procedure at home
- You can send it back to the investigators in the stamped addressed envelope
- In case you have any questions, please do not hesitate to contact the investigators at 780-248-1039

1. Was your journey through the unit well coordinated?	Yes	No
2. Were you comfortable when waiting for the colonoscopy?	Yes	No
3. Was there an excessive delay in waiting for your colonoscopy?	Yes	No
4a. Did you feel that you had an opportunity to ask the nurses or doctors any further questions you may have had - Before going into the endoscopy room? - In the endoscopy room?	Yes Yes Endo room	No No Waiting room
4b. Do you prefer asking your questions in the endoscopy room or before you go in the endoscopy room?		
5. Did you sign a consent form before having the procedure?	Yes	No
6. Did you feel that you understood that sedation medication was given for pain and to make you sleepy?	Yes	No
7. Did you feel in any way discouraged from having the sedative injection?	Yes	No
8a. Did you have sedative medication? 8b. Were you given a choice to have a sedative injection? 8c. If no, would you want to have a choice in having a sedative injection?	Yes Yes Yes	No No No
9. Do you feel that you had adequate time in the endoscopy room and that you and the doctor/nurse doing the colonoscopy were not rushed?	Yes	No
10. Was the doctor doing the colonoscopy courteous and considerate?	Yes	No
11. Were the nurses assisting with the colonoscopy courteous and considerate?	Yes	No
12. Was the colonoscopy more uncomfortable than you thought it would be?	Yes	No

13a. On the scale shown here please indicate how much you remember of the procedure 13b. Do you prefer to be more awake during the procedure?	Don't remember anything	1	2	3	Remember somewhat	4	5	Fully awake
					Yes	No		
<i>We appreciate that many people will feel that these tests do invade their privacy and are not always very dignified. But within these limits:</i>								
14. Did you feel that your privacy was respected as much as possible?					Yes	No		
15. Did you feel that attempts were made to preserve your dignity as much as possible?					Yes	No		
16. Did the doctor / nurse responded well when you reported pain or other symptoms?					Yes	No		
17. Were you treated courteously and with respect during the colonoscopy?					Yes	No		
18. Were the (preliminary) colonoscopy results discussed with you after the procedure?					Yes	No		
19. Was it made clear to you how you could get the final results from the colonoscopy?					Yes	No		
20. Did you feel that you had to wait longer than necessary for discharge instruction from the doctor/ or nurse in the recovery area?					Yes	No		
21. How important is it for you to - Get a written result - See a doctor before discharge	Absolutely very important	1	2	3	Somewhat important	4	5	Not important
	1	2	3	4	4	5		
22. Did you receive a specific aftercare patient information sheet?					Yes	No		
23. Did you know what to do when any problems or questions came up?					Yes	No		
24. Was the procedure	Very uncomfortable	1	2	3	4	5	Very comfortable	
	1	2	3	4	5			
25. Was the procedure	Absolute not acceptable	1	2	3	4	5	Very acceptable	
	1	2	3	4	5			
26. Was the procedure	Very embarrassing	1	2	3	4	5	Not embarrassing at all	
	1	2	3	4	5			
27. How willing would you be to have this same procedure again?	Absolutely not	1	2	3	4	5	Absolutely yes	
	1	2	3	4	5			



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