

Patient Satisfaction with Colonoscopy*

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ABSTRACT

Background. With an increasing trend of colon cancer in Singapore, it is important for patients to be willing to undergo colonoscopy for screening or follow-up treatment. This study explores patient satisfaction with colonoscopy and the quality of endoscopy services.

Methods. A convenience sampling method was used for outpatients scheduled for colonoscopy at Endoscopy Centre from 28 November 2002 to 20 December 2002. Pre-procedure and post-procedure interviews were conducted using a standard questionnaire.

Results. A total of 140 patients, comprising non-sedated patients (24.3%) and sedated patients (75.7%), were recruited for this study. The results showed that 91.2% of the non-sedated patients and 88.7% of the sedated patients were satisfied with the colonoscopy, sedated patients had lower a pain score ($p < 0.001$), 74.3% of patients would choose sedation for future colonoscopy, and at least 88.6% of the patients were satisfied with the services provided. Areas of support services which could be improved included information prior to procedure ($p = 0.245$), helpfulness of counter staff ($p = 0.039$), and adequate rest after scope ($p = 0.050$). Pre-procedural information, such as bowel preparation instructions, needed improvement.

Conclusion. Patients were generally satisfied with colonoscopy experience and services provided. There was indication of patients requesting sedation in repeat procedures. This study provided recommendations for improvement to patient satisfaction with endoscopy.

Keywords: discomfort, information, rest, satisfaction, sedation

INTRODUCTION

Colonoscopy is performed by passing a flexible endoscope through the lumen of the colon (large intestine). Bowel preparation to cleanse the colon is done as a prerequisite for colonoscopy.¹ Patients may experience discomfort and pain when the lumen is inflation with air to keep it distended or the scope is manoeuvred through the colon.¹ Intravenous sedation or sedation with analgesia is given to patients to allay their fear, minimise their discomfort and promote satisfaction.¹ However, some endoscopists feel that with good technical skill, colonoscopy can be done

without sedation.² Nevertheless, even if patients experience little or no discomfort, some may be highly dissatisfied with the way that they are managed during their visit.³ Patients' perception of the staff (whether they are warm, caring and forthcoming with information) as well as the endoscopists (whether reassurance and explanation given) is vital to the satisfaction of patient undergoing colonoscopy.³ Patients' satisfaction with colonoscopy is a measure of the quality of endoscopic services.⁴

With the increasing trend of colon cancer in Singapore, it is important that patients are willing to undergo colonoscopy for screening or follow-up treatment.^{1,5} This study sought to explore patients' satisfaction with colonoscopy and quality of its endoscopy services. The areas of concern are patients' discomfort, pain, pre-procedure information and services provided by

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doctors, nurses and counter staff. The research questions were:

1. Is there any significant difference in the perception of pain and discomfort between sedated and non-sedated patients?
2. Are there any significant differences between sedated and non-sedated patients' satisfaction with colonoscopy?
3. Is there a possible trend, as perceived by the investigator, of patient requesting for sedation?
4. Are there other factors, such as pre-procedure information and service level, which may affect patient satisfaction?

METHODS

Research Design

This study used qualitative and quantitative analysis based on a comparative and descriptive design. A convenience sampling method was used. A similar study (sample not randomised) was done by Rodney *et al.*² This design also reflected the daily activities and practice in the Endoscopy Centre. Sedation/analgesia used for colonoscopy was based on the doctor's preference of sedation practice and the patient's explicit request for sedation.

Research Setting

The study was set at Endoscopy Centre in Singapore General Hospital (SGH). The Endoscopy Centre is a multidisciplinary unit, comprising endoscopists from the departments of colorectal surgery, gastroenterology, general surgery and respiratory medicine. The range of services provided includes diagnostic and therapeutic intervention such as colonoscopy, sigmoidoscopy, oesophageo-gastro-duodenoscopy (OGD), bronchoscopy and endoscopic retrograde cholangio-pancreatography (ERCP). Services are provided in a day surgery setting, available to both inpatients and outpatients.

Selection Criteria

Only outpatients scheduled for colonoscopy were recruited for the study. Patients with communication difficulties such as hearing or speech problems and language barriers or were undergoing sigmoidoscopy and double procedures were excluded from the study.

Sample Size

One hundred and forty-nine patients were recruited from 28 November 2002 to 20 December 2002 for

the study. One hundred and forty patients completed the follow-up interviews. Eight patients left the centre before completion of follow-up interview. One patient was upset with the diagnosis and could not maintain composure to complete the study.

Research Instrument

A standard questionnaire was used during the 10-minute interview. A 5-point scale was used to measure patients' satisfaction with colonoscopy and to obtain feedback on endoscopy services. A discomfort scale and pain scale was used to measure the degree of discomfort and pain felt during colonoscopy (Figs. 1 and 2). The pain scale was modified from the discomfort scale by Chlan *et al.*⁶ Two sections were provided for patients to give open comments.

Validity Test

The content of the questionnaire was validated by endoscopists, biostatisticians, directors of Endoscopy Centre and nurse clinicians. Informal surveys had been conducted with patients, personal friends and colleagues who had colonoscopy experiences. The questionnaires were amended from suggestions given during the informal surveys.

Data Collection Methods

Pre-procedure Preparation

The principle investigator briefed all the staff involved in the data collection method. The nurse in charge of reception of outpatients was briefed on how to recruit patients for the study. Nursing staff in the procedure room were briefed on documenting of procedural and sedation/analgesia data. Two registered nurses were also briefed on the method of conducting post-procedure interviews with patients, to assist the principal investigator if help was needed. This was planned in anticipation of the high turnover of patients and to minimise loss of data.

Procedure

During the study period, outpatients scheduled for colonoscopy at our centre were approached by nurses at the day reception counter of Endoscopy Centre to participate in the study. Pre-procedure interviews on patients' demographic data were conducted by endoscopy staff/principal investigator. Nurses in the procedure room documented the procedural and sedation data after patients had completed colonoscopy. Before discharge, 95% of the patients were interviewed by the principal investigator while 5% of the patients were interviewed by the 2 registered nurses.

Ethical Considerations

Information pertaining to the research study was given to the patients. Consent was obtained from the patients who agreed to participate in the study. Confidentiality and anonymity were assured. All patients were volunteers who could, at any time, withdraw from the study without affecting their care. Approval had been sought from the SGH Ethics Committee prior to commencement of the study.

Data Analysis

Data analysis was performed using SPSS 11.0. Differences between quantitative data were compared using either 2 sample t-Test or Mann Whitney U Test, depending on the normality assumptions. Associations between categorical data were assessed using Chi-square or Fisher Exact Tests. Statistical significance was set at $p < 0.05$. Microsoft Access database software was used to sort out relevant data (from patients' comments) for detailed analysis.

Fisher's Exact Test for non 2×2 tables was used for this study as recommended by biostatisticians consulted. The test can be used for non 2×2 tables to determine if there is any association between 2 categorical variables when the validity of Pearson's Chi-Square test is violated because of "small frequencies" in the cells.⁷⁻⁹

RESULTS

Demographic Data

Table 1 presents the patients' demographics. The sample comprised 66 (47.1%) males and 74 (52.9%) females. Thirty-four (24.3%) patients were not sedated while 106 (75.7%) patients were sedated. Of the 140 patients, the majority were Chinese (91.4%) and had secondary school education (40.7%). The median age of the patients was 52; the youngest was 20 while the oldest was 81 years of age.

Sedation, Procedure, Duration

The sedation/analgesia used was Midazolam and Pethidine. Midazolam was given to all 106 sedated patients (Table 2). Twenty-five (23.6%) sedated patients were given Pethidine in addition to Midazolam. None of the patients were given Diazepam and Fentanyl. The reversal drug Flumazenil was given to 11 (10.4%) sedated patients.

A total of 136 (97.1%) patients completed the procedure. The 4 (2.9%) patients who did not complete the procedure were sedated patients. The median

Table 1. Demographic data of the patients.

Demographics	n (%)
Gender	
Male	66 (47.1)
Female	74 (52.9)
Sedation	
Non-sedated	34 (24.3)
Sedated	106 (75.7)
Race	
Chinese	128 (91.4)
Malay	2 (1.4)
Indian	9 (6.4)
Others	1 (0.7)
Age	
Median	52
Minimum	20
Maximum	81
Education	
None	6(4.3%)
Primary School	17 (12.1%)
Secondary school	57 (40.7)
Tertiary	29 (20.7)
University	31 (22.1)

Table 2. Type of sedation used for colonoscopy.

Type of Sedation	n (%)
Midazolam	106 (100)
Pethidine	25 (23.6)
Diazepam	0 (0)
Fentanyl	0 (0)
Flumazenil (Reversal Drug)	11 (10.4)

Table 3. Patients with/without specific request.

Patients with/without specific request	n (%)
Patients without specific request	103 (73.6)
Patients with specific request	37 (26.4)
Sedation	32 (22.9)
Painless procedure	3 (2.1)
OGD	1 (0.7)
Photograph	1 (0.7)

duration of the procedure was 10 minutes; the minimum was 5 minutes while maximum was 40 minutes.

Specific Request for Sedation

The question "Any specific request for the procedure for today?" was included in the pre-procedure interview. The researcher observed that there were patients who requested for sedation voluntarily. It was not written as "Any request for sedation today" to prevent influencing those patients who did not request for sedation.

Table 4. Doctor's preferred sedation practice and decision to give sedation/analgesia.

	Doctors' Preferred Sedation Practice n (%)	Any Sedation/Analgesia Given?	
		No n (%)	Yes n (%)
Give sedation routinely	76 (54.3)	0 (0)	76 (54.3)
Give sedation on patient's request/required	55 (39.3)	30 (21.4)	25 (17.9)
Give sedation when patient is in pain	7 (5.0)	2 (1.4)	5 (3.6)
No sedation, unaccompanied by relative	2 (1.4)	2 (1.4)	0 (0)

Table 5. Patients' discomfort and pain scores.

	Level of Discomfort		Level of Pain		
	Non-Sedated	Sedated	Non-Sedated	Sedated	
Median	5.00	0.00	Median	3.50	0.00
Minimum	0.00	0.00	Minimum	0.00	0.00
Maximum	8.00	10.0	Maximum	9.00	10.00
Mean (sd)	4.8 (2.0)	2.0 (2.6)	Mean (sd)	3.8 (2.4)	1.9 (2.8)
p value < 0.001 (Mann-Whitney U Test)			p value < 0.001 (Mann-Whitney U Test)		

One hundred and three patients (73.6%) did not have any specific request during the pre-procedure interview while 32 (22.9%) patients requested for sedation (Table 3).

Doctor's Preference of Sedation Practice and Any Sedation/Analgesia Given

Routine sedation was given to a total of 76 (54.3%) patients (Table 4). Of the 55 (39.3%) patients who requested for or required sedation, 30 (21.4%) patients were not sedated. This included patients' request during pre-procedure interview, or the endoscopists felt that patient needs sedation. Of the 7 (5%) patients who were initially not sedated, 5 (3.6%) patients were finally given sedation due to unbearable pain. Two (1.4%) patients were not given sedation because they were unaccompanied by relatives.

Perception of Discomfort and Pain

There were significant statistical differences between the sedated and non-sedated patients ($p < 0.001$) (Table 5). In terms of perception of discomfort and pain, the sedated patients had a lower discomfort and pain score. The median discomfort and pain score for the sedated patient was 0.00. For non-sedated patients the median discomfort score was 5.00 and median pain score was 3.50. Patients described their pain as ranging from slight discomfort to pain akin to giving birth.

Satisfaction with Colonoscopy Experience

Of the 125 (89.3%) patients who were very satisfied/satisfied with the colonoscopy experience, 57 (40.7%) patients were very satisfied while 68 (48.6%) were satisfied (Table 6). Ten (7.1%) patients were dissatisfied with their colonoscopy experience.

Table 7 provides a comparison of the satisfaction levels between the sedated and non-sedated patients. There were no significant differences between the sedated and non-sedated patients in terms of satisfaction ($p = 0.168$).

The most common reason given by sedated patients who were satisfied with the colonoscopy was that the "Procedure is not painful at all". Other reasons cited: "Patient is unaware of what is happening" and "Sedation helps to allay fear". For the non-sedated patient, the "Skillfulness of doctor", and "His explanation during the procedure" were important factors accounting for their satisfaction.

Adequate reassurance given by doctors and nurses and "friendly approach" were important to both group of patients. Others reasons included, "Fast process", "Normal findings of colonoscopy", "Previous endoscopy experience satisfactory". Reasons for dissatisfaction for both groups were that the procedure "is painful", "uncomfortable" and "too fast".

Use of Sedation for Future Colonoscopy

Thirty-one (22.1%) patients from both groups would not choose sedation for future colonoscopy as compared to 104 (74.3%) who would choose sedation for future colonoscopy (Table 8).

Of the non-sedated group, only 10 (29.4%) non-sedated patients would choose sedation for future colonoscopy, while 22 (64.7%) non-sedated patients would still not choose sedation for future colonoscopy. There were significant statistical differences between the 2 groups who chose sedation for future colonoscopy ($p < 0.001$).

Patients' Specific Request and Use of Sedation for Future Colonoscopy

Of the 103 (73.6%) patients who did not have specific sedation request prior to their colonoscopy, 72 (51.4%) would choose sedation for future colonoscopy (Table 9). Details of patients with specific request and use of sedation for future colonoscopy are shown in Table 10.

Doctor's Preferred Sedation Practice and Patients' Decision on Use of Sedation for Future Colonoscopy

Of 76 (54.3%) patients who received routine sedation, 6 (4.3%) would not choose sedation for future colonoscopy (Table 11). Of the 55 (39.3%) patients who requested or required sedation, 24 (17.2%) would not choose sedation for future colonoscopy. There were significant statistical differences ($p < 0.001$).

Feedback on Service Provided

A 5-point ordinal scale was used to obtain feedback from patients on the service provided, ranging from 1 (Strongly Agree) to 5 (Strongly Disagree). A second level of analysis was performed cross-tabulating the endoscopy services provided and patient satisfaction with colonoscopy experience. The overall rating of information prior to procedure, counter staff, nurses and doctors were in the range of 88.6 to 96.4% (Table 12). In addition, 18 patients had given compliments such as "good service" and "excellent".

Information Provided Prior to Procedure

"Overall rating of information prior to procedure" had a satisfaction rate of 93.6% and no statistical significance ($p = 0.245$) (Table 13). There were 3 areas in which patients perceived there was room for improvement. Seven patients commented that the colonoscopy fee was not well explained and 13 patients highlighted that the information pamphlet for bowel preparation needed improvement.

Table 6. Patients' rating of satisfaction with colonoscopy.

Overall satisfaction	n (%)
Very Satisfied	57 (40.7)
Satisfied	68 (48.6)
Neutral	5 (3.6)
Dissatisfied	10 (7.1)

Table 7. Non-sedated vs sedated patients' rating of satisfaction with colonoscopy.

	n (%)
Non-sedated patients	
Very Satisfied	9 (26.5)
Satisfied	22 (64.7)
Neutral	1 (2.9)
Dissatisfied	2 (5.9)
Sedated patients	
Very Satisfied	48 (45.3)
Satisfied	46 (43.4)
Neutral	4 (3.8)
Dissatisfied	8 (7.5)
p value=0.168 (Fisher's Exact Test)	

Table 8. Patients' decision on use of sedation for future colonoscopy.

	Choose Sedation?		
	No n (%)	Yes n (%)	Not Sure n (%)
Non-sedated Patients	22 (15.7)	10 (7.1)	2 (1.4)
Sedated Patients	9 (8.5)	94 (67.2)	3 (2.2)
Total n (%)	31 (22.1%)	104 (74.3)	5 (3.6%)

Table 9. Patients' (with or without specific request) decision on use of sedation for future scope.

	Choose Sedation?			
	No n (%)	Yes n (%)	Not Sure n (%)	Total n (%)
Without specific request	27 (19.3)	72 (51.4)	4 (2.9)	103 (73.6)
With specific request	4 (2.9)	32 (22.8)	1 (0.7)	37 (26.4)
p value=0.108 (Fisher's Exact Test)				

Table 10. Patients' (with specific request) decision on use of sedation for future scope.

	Choose sedation?		
	No	Yes	Not Sure
Specific request			
Sedation	4 (2.9)	28 (20.0)	0 (0)
Painless procedure	0 (0)	3 (2.1)	0 (0)
OGD	0 (0)	1 (0.7)	0 (0)
Photograph	0(0)	0 (0)	1 (0.7)

Table 11. Doctor's preferred sedation practice and patients' decision on use of sedation for future scope.

Doctors' preferred sedation practice	Would patients choose sedation?			
	No n (%)	Yes n (%)	Not Sure n (%)	Total n (%)
Give sedation routinely	6 (4.3)	68 (48.6)	2 (1.4)	76 (54.3)
Give sedation on patient's request/required	24 (17.2)	28 (20.0)	3 (2.1)	55 (39.3)
Give sedation when patient is in pain	0 (0)	7 (5.0)	0 (0)	7 (5.0)
No sedation, unaccompanied by relative	1 (0.7)	1 (0.7)	0 (0)	2 (1.4)

p value < 0.001 (Fisher's Exact Test)

Table 12. Patients' overall rating of services.

	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)	Fisher's Exact Test p value
Overall rating of information prior to procedure	69 (49.3)	62 (44.3)	8 (5.7)	1 (0.7)	0 (0)	0.245
Overall rating of counter staff	57 (40.7)	67 (47.6)	12 (8.6)	4 (2.8)	0 (0)	0.654
Overall rating of nursing staff	68 (48.6)	67 (47.6)	5 (3.6)	0 (0)	0 (0)	0.416
Overall rating of doctor	65 (46.4)	65 (46.4)	8 (5.7)	2 (1.4)	0 (0)	0.379

Table 13. Patients' rating of information provided prior to procedure.

	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)	Fisher's Exact Test p value
The doctor was able to explain diagnoses and treatment well	43 (30.7)	88 (62.9)	8 (5.7)	1 (0.7)	0 (0)	0.406
The appointment date and time were clearly indicated	40 (28.6)	98 (70.0)	2 (1.4)	0 (0)	0 (0)	0.643
The bowel preparation was clearly explained	39 (27.9)	94 (67.1)	2 (1.4)	5 (3.6)	0 (0)	0.599
The fee for colonoscopy was clearly explained	21 (15.0)	102 (72.9)	10 (7.1)	7 (5.0)	0 (0)	0.518
Pamphlets on information of colonoscopy were provided	21 (15.0)	104 (74.3)	2 (1.4)	13 (9.3)	0 (0)	0.344

Table 14. Patients' rating of service provided by counter staff.

	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)	Fisher's Exact Test p value
The counter staff are helpful and friendly	31 (22.1)	87 (62.2)	14 (10.0)	8 (5.7)	0 (0)	0.039
The counter staff are prompt and attentive	27 (19.3)	93 (66.4)	15 (10.7)	5 (3.6)	0 (0)	0.492
The staff are helpful in answering queries	27 (19.3)	85 (60.7)	21 (15.0)	7 (5.0)	0 (0)	0.089

Service Provided by Counter Staff

The overall satisfaction rating of counter staff was 88.6% (Table 14). Thirteen patients were dissatisfied with the service, while the majority felt that the counter staff was helpful and friendly.

Service Provided by Nursing Staff

The overall satisfaction rating for nursing staff was 96.4% (Table 15). The majority described the nursing staff as "helpful and friendly" and "prompt and attentive".

Table 15. Patients' rating of service provided by nursing staff.

	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)	Fisher's Exact Test p value
The nursing staff are helpful and friendly	49 (35.0)	90 (64.3)	1 (0.7)	0 (0)	0 (0)	0.024
The nursing staff are prompt and attentive	47 (33.6)	91 (65.0)	2 (1.4)	0 (0)	0 (0)	0.087
The nursing staff had kept me informed of any delays	0 (0)	10 (7.1)	107 (76.5)	23 (16.4)	0 (0)	0.332
The nursing staff were caring and considerate during the procedure	46 (32.9)	83 (59.3)	9 (6.5)	1 (0.7)	1 (0.7)	0.119
The nursing staff ensured that I adequately rested before discharge	32 (22.9)	102 (72.9)	2 (1.4)	4 (2.8)	0 (0)	0.050
The nurses explained about the outcome of procedure	26 (18.6)	109 (77.9)	1 (0.7)	4 (2.8)	0 (0)	0.345
The nursing staff explained instructions clearly after procedure	28 (20.0)	109 (77.9)	2 (1.4)	1 (0.7)	0 (0)	0.088

Table 16. Patients' rating of service provided by doctors.

	Strongly Agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly Disagree n (%)	Fisher's Exact Test p value
The doctor was caring and considerate	55 (39.3)	70 (50)	13 (9.3)	2 (1.4)	0 (0)	0.224
The doctor provided information on the needs of colonoscopy	46 (32.8)	60 (42.9)	25 (17.9)	8 (5.7)	1 (0.7)	0.047
The doctor explained the procedure	44 (31.4)	66 (47.1)	18 (12.9)	12 (8.6)	0 (0)	0.144
Reassurance was given during procedure	45 (32.1)	76 (54.3)	14 (10.0)	4 (2.9)	1 (0.7)	0.444

Of the patients, 95.7% felt that they "adequately rested before discharge". There was no statistical difference in the item "The nursing staff had kept me informed of any delay".

One hundred and seven (76.4%) patients were neutral towards the statement "The nursing staff had kept me informed of any delays", while 23 (16.4%) patients felt that they had not been informed when the procedures were delayed.

Service Provided by Doctors

The overall satisfaction rating for the doctor was 92.9%. The majority of patients were satisfied with the doctors' explanation on the procedure and the need for it. Table 16 details the patients' satisfaction rating on the service provided by the doctors.

Open Comments by Patients

Patients reported other areas of dissatisfaction in the section provided for open comments. Thirty-three patients experienced discomfort during the procedure, inconvenience of bowel preparation or inadequate post-sedation advice (2 patients were not informed not to drive and a relative needed if sedation was given).

DISCUSSION

In this study, the majority of patients (n=128, 91.4%) were Chinese because the incidence rates of colon cancer in Singapore are highest among this ethnic group.⁵ The results of this study, comprising 34 (24.3%) non-sedated patients and 106 (75.7%) sedated patients, were similar to those of Rodney *et al* (1993) [N=164; 38 (23.1%) non-sedated patients and 126 (76.8%) sedated patients].²

The majority (89.3%) of the patients were very satisfied/satisfied with their colonoscopy experience. The sedated patients had a higher percentage (45.3%) of very satisfied experiences compared to non-sedated patients (26.5%). This was due to the differences in the perception of pain for both groups of patients in that the sedated patients had a lower discomfort and pain score ($p < 0.001$). Sedation also helped to ease nervousness. However, the overall satisfaction rate of sedated patients was lower (88.7%) than that of non-sedated patients (91.2%). The maximum pain score (10.0) of sedated patients was higher than the non-sedated patients (9.0). There were 3 patients who were dissatisfied and preferred sedation to be given at the beginning of the procedure. Two dissatisfied sedated patients complained of inadequate sedation. These 2

patients may belong to the category of patients who were highly sensitive to the extent that even maximum sedation may not have an effect on them.

The non-sedated patients had a higher percentage (64.7%) of satisfactory experience compared to sedated patients (43.4%). This was because the non-sedated patients had a higher discomfort score (5.00) than pain score (3.50). The patients were aware of the procedure and able to describe the discomfort precisely. "Fast process", reassurance by doctors and nurses helped them to overcome the discomfort.

This showed that control of discomfort and pain was vital in patient satisfaction. Discomfort and pain were the main reasons given by the 2 groups who were dissatisfied or rated their satisfaction as neutral.

Only 10 (29.4%) non-sedated patients chose sedation for the repeat colonoscopy.

Majority (64.7%) of the non-sedated patients who were very satisfied/satisfied with colonoscopy experience would not choose sedation for future scope. There was statistical significance of both groups ($p < 0.001$) in choosing sedation for future colonoscopy. This showed that colonoscopy could be done without sedation but majority of the patients preferred sedation.

For patients' who had specific request during the pre-procedure interview, their main concerns were pain and discomfort and most of them (32, 22.8%) chose sedation for future scope. The majority of the patients (48.6%) who were given routine sedation chose sedation for future scope. A higher percentage (20%) of patients chose sedation for future scope compared to 17.1% of patients who would not choose sedation for future scope (sedation will be given if patients request or require).

All (5%) patients who would be given sedation if in pain chose sedation for future scope. One of the 1.4% patients who was not given sedation because he had no relatives to accompany him home chose sedation. This patient reported that he had not been given post-sedation advice.

Patients' request for sedation during pre-procedure interview, patients who received routine sedation and preferred sedation for future scope were indications that there were more patients choosing sedation for repeat procedure. Patients' previous endoscopy experience with sedation and knowledge of pre-procedure information for sedation would likely lead them to choose sedation for future scope. However, due to the small sample size, the results were not conclusive.

There were 3 areas of differences in statistical and clinical significance in "Information prior to procedure" ($p = 0.245$). Patients had highlighted that the explanations for colonoscopy fee, pamphlet and instructions for bowel preparation were not clear. Although the results did not reach statistical significance, the patients' views were of paramount importance as majority of the patients were mature (median age of 52) and well educated. A study by Sincock *et al* had highlighted an area of differences in statistical and clinical significance in which patients who underwent sigmoidoscopy were 6 times ($p = 0.054$) more likely to perceive their waiting time as unacceptable.⁴ Other areas for improvement included pre-procedure information for sedation such as no driving and relative needed to accompany patient home if sedation is given.

The majority of the patients were satisfied with "fast process". The median duration of the procedure was 10 minutes. However, this may affect the services of counter staff, causing them to compromise on service quality. The problem was intensified when there was a shortage of counter staff. The increase in number of sedated patients affected the turnaround time at the recovery area, which may have led to a small number of patients complaining of inadequate rest. There was less contact time between doctors and patients. Some patients hoped that doctors could provide more information, while some patients understood that it was due to time constraints. Otherwise, patients were satisfied with the reassurance given by doctors.

LIMITATION OF THE STUDY DESIGN/METHOD

As this study did not utilise random sampling, there is potential for bias.⁷ Convenience sampling was chosen for this study because the researcher had anticipated there would be more sedated patients and less non-sedated patients. However, studies using a randomised controlled trial method showed similar results — that patients preferred sedation.¹⁰ Convenience sampling was commonly used in endoscopy setting.^{2,11} It helped to obtain a quick result and enable the management to implement strategies to improve the quality of endoscopy services.

The post-procedure interview conducted before patients were discharged might have led to bias result in that the amnesic effect of sedation might have affected the sedated patient's view or opinion. Although a post-procedure interview on the following day is the preferred choice, this was not possible, due to time and staff constraints.

Since this was the first research conducted to evaluate patients' satisfaction with colonoscopy, there was a lack of statistical data to support a positive trend of patients requesting sedation.

Prior knowledge of previous endoscopy experience was not known. Such knowledge might have helped draw conclusions on any increasing trend of patients requesting sedation.

Clinical diagnoses were not included in the study and the study was hence unable to draw conclusions on whether irritable bowel syndrome or colitis were the causes of inadequate sedation.

The sample size was small, representing 1.4% of the total colonoscopies with or without polypectomy (9909) done in the year 2002.

NURSING IMPLICATIONS

This study showed that sedation, adequate pre-procedure information and quality service by counter staff, doctors and nurses were vital in patient satisfaction. The need for pre-procedure information on sedation, improvements in instructions and explanation for bowel preparation and colonoscopy fee and patients' request for more information pertaining to colonoscopy were communicated to the respective disciplines. Various strategies were implemented to improve patient satisfaction. Addenda for specific procedures (OGD, colonoscopy, ERCP) were implemented. They provide information pertaining to these procedures and post-sedation advice (for example, no driving and relative needs to accompany patient home). These measures ensure patients are aware of the choices available to them (sedation/no sedation) as well as complements doctor-patient communication. Improvements to instructions, explanations for bowel preparation and colonoscopy fees had been carried out and had received positive feedback.

Other measures for improving patient satisfaction included sending counter staff for courses that enhance service quality skills and giving them assistance when necessary. Since 95% of the patients indicated that they had rested adequately, it will be beneficial to continue giving quality nursing care.

It is important that the nurses monitor the trend of patient requesting for sedation, as the use of sedation will have an impact on the cost of health care.

RECOMMENDATIONS FOR FUTURE RESEARCH

Future research should focus on a randomised and larger sample for study of patient satisfaction with colonoscopy which includes post-procedure interview at following day and to compare patients' previous endoscopy experience and repeat endoscopy experience. A study in using alternative drugs for bowel preparation to minimise patients' discomfort should also be explored.

CONCLUSION

The patients were generally satisfied with the colonoscopy and endoscopy services provided. There were differences in perception of pain for both groups of patients in that the sedated patients experienced less discomfort and pain score. There was indication of patients requesting for sedation in repeat procedure. Patients who had requested for sedation before procedure preferred sedation for future scope; the majority of the patients who received routine sedation also preferred sedation for future scope. In this study, a total of 74% of the patients had requested for sedation. To establish signs of a trend, it will be necessary to conduct further research. In addition, it is important to monitor the trend for sedation for further future planning. Pre-procedure information, quality services provided by the counter staff, nurses and doctors were vital to patient satisfaction.

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