

# Poor Bowel Preparation in Patients Undergoing Colonoscopy

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## Summary

A prospective analysis of 500 consecutive patients undergoing colonoscopy at the endoscopy unit of Hospital UKM under the care of the surgical unit was analysed. All colonoscopies were supervised by one of two consultant surgeons. The bowel preparation was graded from grade 1 to 4 according to established criteria. All patients had 3 litres of colonic lavage solution as bowel preparation. One hundred and two patients (20.4%) were considered to have poor bowel preparation, while 398 patients (79.6%) had good bowel preparation. Statistically significant factors that resulted in poor bowel preparation included age <20 years and >60 years ( $p < 0.0001$ ), and inpatients ( $p < 0.0193$ ). There was no significant difference in respect to sex, ethnic groups and the indication for colonoscopy. We conclude that young adults and the elderly as well as inpatients are more likely to have a poor bowel preparation using the standard regime.

**Key Words:** Colonoscopy, Bowel preparation, Malaysia

## Introduction

The colonoscope allows direct visualisation, excision of polyps and biopsy of any potential lesion within the colon and distal ileum. A good mechanical bowel preparation is necessary prior to the colonoscopy to avoid missing any significant pathology that may occur in the colon. With increasing demands on the healthcare system, outpatient bowel preparation for colonoscopy is being increasingly implemented with success<sup>1,2</sup>. We analysed patients and factors associated with poor bowel preparation prior to colonoscopy.

## Materials and Methods

A prospective analysis of 500 patients who had colonoscopy at the Colorectal Unit, Hospital Universiti Kebangsaan Malaysia, Kuala Lumpur from July 1996 to October 1997, was analysed. Further detailed analysis of

102 patients who were classified as poor bowel preparation was performed. The quality of bowel preparation was determined by the surgeon who conducted the colonoscopy and graded from 1 to 4<sup>3</sup>.

- Grades 1: Poor: Large amount of faecal residue, unacceptable study
- Grades 2: Fair: Moderate amount of faecal/fluid residue preventing a reliable study
- Grades 3: Good: Small amount of faecal/fluid residue not preventing a reliable study
- Grades 4: Excellent: Minimal faecal/fluid residue

Grades 1 and 2 were considered unsatisfactory and grades 3 and 4 considered satisfactory. Bowel preparation prior to the colonoscopy was achieved by prescribing 2 litres of colonic lavage solution (polyethylene glycol) the evening before and 1 litre of colonic lavage solution the following morning.

Patients were given written and verbal instructions regarding the method of preparation and restricted to a fluid diet in the preceding evening and night. Inpatients were given identical instruction and in addition assistance from the nursing staff.

For statistical analysis, Fischer's exact test was used for comparing the data. A p value of less than 0.05 was considered statistically significant.

**Results**

Of the 500 patients who had colonoscopy: 398 had good bowel preparation (79.6%) and 102 patients had poor bowel preparation (20.4%). Both groups were equally matched with regards to, sex, ethnic group, setting, and indications for colonoscopy. Analysis was carried out between these two groups and is summarised in Table I.

Within this group of poor bowel preparation, 65 patients (63.7%) were inpatients and 37 (36.3%) were outpatient. Males were slightly predominant (53 patients, 52.0%) compared to female (49 patients, 48.0%). The Malay ethnic group contributed the highest percentage 51 patients (50.0%), followed by Chinese 38 (37.3%), Indians 9 (8.8%) and others 4 (3.9%). In term of age distribution, the elderly aged above 60 years old were most often colonoscoped. The youngest patient was a 9 year old boy while the eldest was a 80 year old man. The common indications for colonoscopy in this study were rectal bleeding 31 patients (30.4%), followed by altered bowel habit and surveillance colonoscopy for previous rectal disease, 27 patients (26.5%) and 22 patients (21.6%) respectively. Other indications included abdominal mass(10), abdominal pain (6) and intestinal obstruction (1).

There was a statistically significant increase in the number of poor bowel preparations in patients aged <20 years and >60 years (p<0.0001). Comparing the inpatients and outpatients, there was a statistically significant difference (p<0.0193), to indicate a greater proportion of poor bowel preparations in the inpatient group.

**Table I**  
**Bowel Preparation Prior to Colonoscopy:**  
**Comparison of Some Characteristics Between**  
**Well Prepared and Poorly Prepared Patients**

		Good	Poor	Total
Total		398	102	500
Age	< 20	16	10	26
	20 - 29	26	3	29
	30 - 39	44	9	53
	40 - 49	80	19	99
	50 - 59	94	1	113
	> 60	138	42	180
Sex	Male	198	53	251
	Female	200	49	249
Ethnic Origin	Malay	155	51	206
	Indian	65	9	74
	Chinese	175	38	213
	Others	3	4	7
Setting	Inpatient	200	65	265
	Outpatient	198	37	235
Indications	PR bleeding	94	31	125
	Surveillance	102	22	124
	Mass	32	10	42
	Anaemia	4	5	9
	Altered bowel habit	87	28	115
	Abd. Pain	67	6	73
	Others	12	0	12

**Discussion**

Outpatient bowel preparation is effective, reduces hospital stay and substantially reduces the cost<sup>4,6</sup>. Polyethylene glycol gut lavage is an effective bowel preparation and commonly used for colonoscopy. The quality of the preparation is not however uniform, and a number of studies report a rate of suboptimal cleansing of 10 - 33%<sup>7,8</sup>. One of the possible reasons for a poor preparation is the length of time between the lavage and examination. It has been shown that patients who drink gut lavage on the morning of their colonoscopy have a better preparation in all areas of the colon compared to patients who take their preparation the night before<sup>9</sup>.

## ORIGINAL ARTICLE

The higher incidence of poor bowel preparation among the inpatient group in our study may be related to several factors. These patients are generally ill compared to the outpatients and this may affect their ability to complete the volume of fluid required for the colonic lavage. In addition, due to the present situation of junior nurses, lack of nurses, and a disproportionate ratio of patients to nurses, the attention required by these inpatients may not be optimal. In comparison, the majority of outpatients have a family member as an assistant to aid the patient in the colonic lavage. With improved staffing on the wards, better understanding of the problems and identification of potential problems, these problems can be overcome. These results are in contrast to published data on bowel preparation when comparing inpatients and outpatients where no significant differences were noted, however previous studies have used much smaller patient numbers<sup>1,2,8</sup>.

Another interesting point noted in this study is the statistically significant number of poor bowel preparations seen in the young and the elderly. The elderly patients may have difficulty in managing the

large volumes and in addition the instructions may be difficult to understand particularly in those living on their own. A family member together with the patient should be instructed regarding the importance of bowel preparation, and in addition, these patients may not be given more time in the clinic visit and perhaps reinforcement of the doctors' instruction by an attending nurse before leaving the clinic.

The poor bowel preparation in the younger aged group is an unexpected finding. Possible explanations as to the reason for poor bowel preparation may be poor compliance and lack of understanding in relation to the importance of a good bowel preparation. Again, the importance of a good bowel preparation must be emphasised to this group of patients in the clinic visit prior to the colonoscopy.

In conclusion, poor quality of bowel preparation is significantly higher amongst inpatients, the young and the elderly. Better communication between the doctor and the patient, as well as improved nurse patient ratio may help in reducing the number of poor bowel preparations.

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