

# Detection rate of colonic polyp among patients who had undergone colonoscopy at gastroenterology unit of Serdang Hospital, Malaysia

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## ABSTRACT

**Objective:** The aim of this study was to evaluate the demography, and to determine the detection rate of polyps, and detection rate of adenoma at a Malaysian tertiary hospital.

**Methods:** This is a retrospective study of all the patients who had undergone colonoscopy at Gastroenterology endoscopy unit, Serdang Hospital from 1st January 2010 to 31st December 2016. Patients who had a history of colorectal cancer, polyp or inflammatory bowel disease were excluded. Data collected which included patients' demography, indication for colonoscopy, colonoscopy finding, and histopathology results. Data was analysed with SPSS version 16.

**Results:** Among the 559 patients who had fulfilled the inclusion criteria (68 males, 44 females), 112 patients were found to have at least one polyp giving the polyp detection rate (PDR) of 20% and 168 polypectomies were performed. The PDR among male patients was higher than that of females (22.5% vs 17.1%,  $p < 0.05$ ). The detection rate of polyp was nearly equal in Malays, Chinese, Indians, and Others. The polyps were more common in those of age 40 years old and above ( $p < 0.05$ ), with the mean age of  $63.0 \pm 1.5$  years. The commonest morphology of polyp in our patients was sessile (58%) and majority was medium size (5-9mm). Otherwise, the polyps were commonly found in the distal colon those that in proximal colon (55.3% vs 38.7%,  $p < 0.05$ ). The adenoma detection rate (ADR) was 19.1% (107/559).

**Conclusion:** The detection rate of colonic polyp from colonoscopy is 20% in our centre.

## KEY WORDS:

*Colorectal cancer, colonoscopy, screening, Malaysia, polyp detection*

## INTRODUCTION

Colorectal cancer (CRC) remains as one the most common form of gastrointestinal cancer around the world. The number of cases of colon cancer has been on the rise in Asian countries over the past few years.<sup>1</sup> In Malaysia, CRC is the second most common cancer in males and third most

common cancer in females.<sup>2</sup> The increasing number of cases has directly increased with the economic burden in regard to direct medical care and non-medical cost. It has been estimated that the cost of management of new cases of CRC could reach up to MYR108 million per year.<sup>3</sup>

In fact, it is the fourth leading cause of mortality in the world and has account for 8-12% of mortality in the world with estimated 1.4 million new cases a year.<sup>4</sup> Most colorectal carcinoma arises from the progression of adenoma from small to large polyps and then to dysplasia and carcinoma. On average, it takes at least 10 years for this progression.<sup>5</sup> Given that the slow and long duration in the process of conversion of colorectal adenomas into adenocarcinoma, early detection and colonoscopic removal of these precancerous polyps are very effective in reducing the incidence and mortality rate of CRC in long run.<sup>6</sup>

Recent studies have shown that endoscopic procedures of the colon could half the risk of developing colorectal carcinoma and its protective benefit could last as long as six years.<sup>7</sup> The ASGE/ACG taskforce on quality in endoscopy have recommended that adenoma detection rates of 15% or higher for female patients and 25% or higher for male patients as indicators of adequate colonoscopy quality.<sup>8</sup>

## METHODS

This is a retrospective cross section study of all patients who had undergone colonoscopy at the Gastroenterology Endoscopy Unit (GEU), Serdang Hospital from the 1st January 2010 to 31st December 2016. The records of the patients were traced from Hospital Information System (EHIS). Data such as patient gender, age, ethnicity, indication for colonoscopy, colonoscopic finding and complication, histopathology finding of polyps were extracted and further analysed. The analysis was done using EXCEL and SPSS for Windows version 16.0. Categorical variables are expressed as numbers and percentages.  $\chi^2$  or Fisher's exact test, where appropriate, was used for analysis of categorical variables. A two-tailed  $p < 0.05$  was considered statistically significant.

Patients included in the study were those with follow up at own Gastroenterology and Hepatology Clinic, Serdang Hospital, and patients who were internally referred from

**Table I: Characteristics of the patients whom have undergone Colonoscopy**

Variable	n(%), total 559
Gender	
Male	302(54.0%)
Female	257(46.0%)
Ethnicity	
Malay	238(42.6%)
Chinese	224(40.1%)
Indian	79(14.1%)
Others	18 (3.2%)
Age group	
<20	19 (3.4%)
20-39	78 (14.0%)
40-59	167 (29.9%)
60-79	281 (50.2%)
>80	14 (2.5%)
Indications of screening	
CRC screening	157(28.1%)
Anaemia	208(37.2%)
Chronic constipation	49 (8.8%)
Chronic diarrhea	75(13.4%)
PR Bleed	40 (7.1%)
Others (abdominal pain, Unexplained weight loss)	30 (5.4%)

**Table III: Characteristic of polyps**

Variable	n(%), total 168	P value
Size		
Small (<5mm)	50(29.7%)	
Medium (5 – 9 mm)	70(41.7%)	
Large (>10mm)	48(28.6%)	
Morphology		
Pedunculated	62(36.9%)	
Sessile	97(57.7%)	
Circumferential	9(5.4%)	
Histopathology		
Non-adenoma/Hyperplastic	30 (17.9%)	
Adenoma (Total)	107 (63.7%)	
- Tubular	52	
- Tubulovillous	48	
- Villous	7	
Serrated	7 (4.2%)	
Juvenile	3 (1.8%)	
Adenocarcinoma	13 (7.7%)	
Inflammatory	8 (4.7%)	
Location		
Caecum	21 (12.5%)	
Ascending colon	22 (13.1%)	
Transverse colon	22 (13.1%)	
Descending colon	40 (23.8%)	
Sigmoid colon	32 (19.0%)	
Rectum	21(12.5%)	
Entire Colon	10 (6.0%)	
		Distal colon vs Proximal colon 55.3% vs 38.7%, p<0.05

other departments such as General Medical Department, General Surgical Department, and referrals from local district hospitals and clinics. All the colonoscopies were performed by our three qualified gastroenterologists, with sedation of midazolam and fentanyl. Informed consents were obtained

**Table II: Detection Rate of Polyps according to Gender/Ethnicity/Age group**

Variable	n(%)	P value
PDR	112/559(20.0%)	
Gender		p<0.05
Male	68/302(22.5%)	
Female	44/257(17.1%)	
Ethnicity		p<0.05
Malay	47/238(19.7%)	
Chinese	45/224(20.1%)	
Indian	18/79(22.8%)	
Others	2/18(11.1%)	
Age group		p<0.05
<20	2/19 (10.5%)	
20-39	10/78 (12.8%)	
40-59	36/167 (21.6%)	
60-79	60/281(21.3%)	
>80	4/14 (28.6%)	
<40	12/97 (12.4%)	
40 years old and above	100/462 (21.6%)	

prior the colonoscopy. The average withdrawal time during colonoscopies was at least six minutes. Only those with complete colonoscopy (successful caecal intubation) were included in this study. Indications for colonoscopy included CRC screening, anaemia, chronic constipation, chronic diarrhoea, per rectal bleeding, and others (persistent abdominal pain, unexplained weight loss). Those who had colonic polyps were further analysed according to the polyp's size (small, medium, and large), morphology (pedunculated, sessile, circumferential), histopathology (non-adenoma/hyperplastic, adenoma, serrated, juvenile, adenocarcinoma, and inflammatory), and location (proximal colon including caecum, ascending colon and transverse colon; distal colon including descending colon, sigmoid colon and rectum; and entire colon). We have looked into complications of colonoscopy including post polypectomy bleeding, complications from over sedation and bowel perforation.

Both Polyp Detection Rate (PDR) and Adenoma Detection Rate (ADR) were accounted. The PDR was defined as the proportion of procedures in which at least one polyp was found over the total number of colonoscopies. ADR was defined as the number of colonoscopies in which at least one adenoma was found, divided by the total number of colonoscopies performed.

Patients who were excluded from our study either had incomplete colonoscopy (caecal intubation was not achieved during the colonoscopy due to poor bowel preparation, looping, pain intolerance, prior surgery with adhesions and altered anatomy), or incomplete data, or those who had polyps/Colorectal cancer/Inflammatory bowel disease/colonic resection before or repeated colonoscopy for previous incomplete colonoscopy.

This study was registered in accordance with the National Medical Research Register Malaysia (NMRR-17-2494-37735 (IIR).

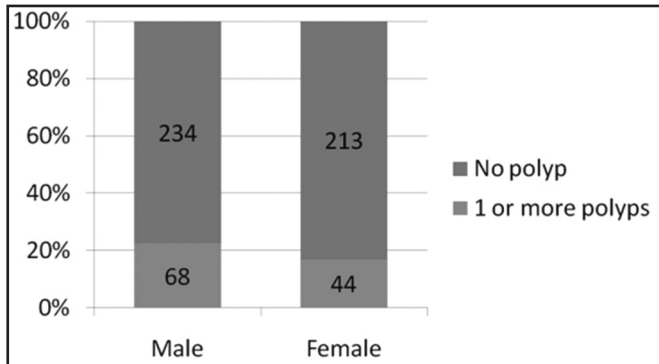


Fig. 1: Detection Rate of Polyps According to Gender.

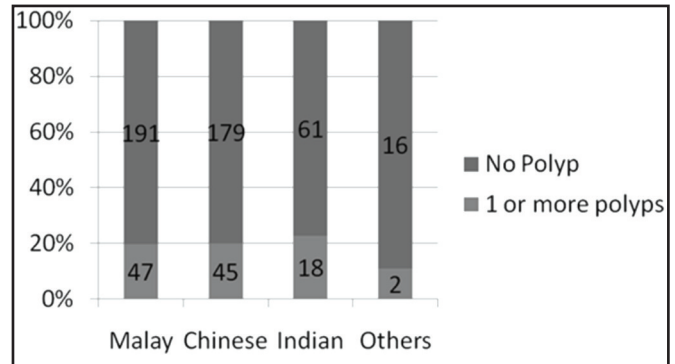


Fig. 2: Detection Rate of Polyps According to Ethnicity.

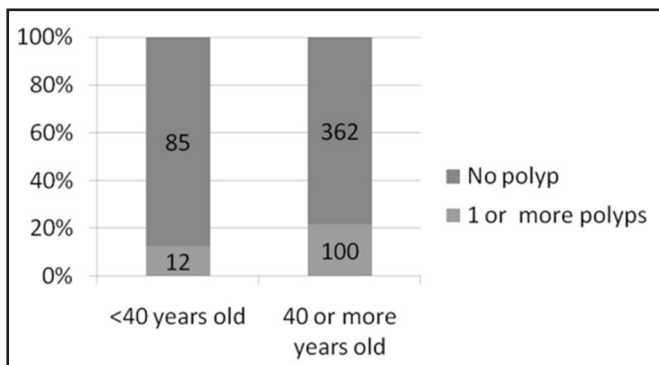


Fig. 3: Detection Rate of Polyps according to Age Group.

**RESULTS**

A total of 725 colonoscopies were performed at our GEU with 92% (669/725) of successful caecal intubation rate. However, only 559 of them (77.0%) were recruited to our study. Distributions of male and female subjects was 54% and 46% respectively. The ethnicity distribution of our patients was Malays (42.6%), Chinese (40.1%), Indians (14.1%) and others (3.2%). Their ages were between age 60-79 years. Anaemia was the most common indication for colonoscopy (37.2%). The characteristics of the patients in this study is summarized in Table I.

Among the 559 patients, a total of 112 patients were found to have at least one polyp. The overall estimate of PDR was 20.0% (112/559), with 168 polypectomies performed. The PDR among the male patients was significantly higher than that of female patients (22.5% vs 17.1%,  $p < 0.05$ ) as shown in Fig 1. Detection rate of polyps among the ethnicity were nearly equal (Malay - 19.7%, Chinese - 20.1%, Indian - 22.8%,  $p < 0.05$ ) as shown in Table II. Polyps were more commonly detected in those age 40 years old and above (age less than 40 years old 12.4%, Age 40 years old and above 21.6%,  $p < 0.05$ ) as shown in Fig 2. The mean age of patients with polyp was  $63.0 \pm 1.5$  years. We found that the commonest morphology of polyp in the patients was sessile (57.7%) and the majority (41.7%) were medium size (5-9mm). Three patients had multiple polyposis coli over entire large bowel. Otherwise, the prevalence of polyps in distal colon was higher than that in proximal colon (55.3% vs 38.7%,  $p < 0.05$ ). Majority of the polyps were located in the recto sigmoid

region (31.5%) followed by descending colon (23.8%), ascending (13.1%), transverse colon (13.1%) and caecum 12.5%.

The ADR in this study was 19.1% (107/559). 63.7% of the polyps detected were adenomas which consist of tubular 48.6%, tubulovillous 44.9% and villous 6.5%. (Table III). This was followed by non-adenoma/hyperplastic 17.9%, adenocarcinoma 7.7%, inflammatory 4.8%, serrated 4.2% and juvenile 1.8%.

Only two patients (0.3%) developed complications from colonoscopies, one developed side effect of sedation which required intubation, and another developed bleeding post polypectomy which was treated endoscopically. No mortality was reported during colonoscopy procedures.

**DISCUSSION**

Based on the colonoscopies findings, our overall estimate for PDR was 20.0% while ADR was 19.1%. The PDR was similar to reports from the Middle East.<sup>9-11</sup> However, the PDR and ADR rates in this study was comparatively low when compared with figures from Western and some East Asian Countries.<sup>12-18</sup> Compared to African countries (PDR, 16.1%; ADR, 6.8%), both of our PDR and ADR rates were reported to be higher.<sup>19</sup>

We inferred from our study that male gender and older age were the strong indicators for occurrence detection of colonic polyp.

Male gender was believed to have a higher impact on prevalence of either colonic polyp or CRC. Moreover, it was detected that advanced neoplasia was at a significantly higher rate in men than in women, which may warrant refinement of the screening recommendations for CRC.<sup>20,21</sup> This could be explained by the lifestyle, especially red meat intake and smoking habit, which were very common among males. Woman on the other hand perhaps had hormonal changes and some may even be on contraceptives or hormonal pills which somehow protect them from the risk of colonic polyp or CRC.<sup>22</sup>

Age was another strong risk factor for colonic polyp or CRC, and older age is the most important predictor for the prevalence of adenomas and cancer. In our study, most of

our patients were in the age 40 years old and above, and 28.6% of those were more than 80 years old were found to have polyp during the colonoscopy. This finding was consistent with the literature where the increased prevalence of colonic polyp was with increasing age.<sup>23</sup>

Ethnic differences had been reported for colorectal polyps and large bowel cancer; although the supporting data was weak and inconclusive. Malaysia is a multiracial country consisting of Malays, Chinese, Indians and numerous indigenous people, and our patients' ethnicity distribution was Malays (42.6%), Chinese (40.1%), Indians (14.1%) and others (3.2%). Each ethnicity had its own religion, festivals, food and customs. However, we show that PDR in all the ethnicity was nearly equal being about 20%. This corresponded to a cross-sectional study among different racial patients among Asians attending for colonoscopy over a 41-month period in a private endoscopy centre and they had concluded that race did not appear to be an important factor.<sup>24</sup>

In our study, the vast majority of the polyps were found at distal colon located over recto sigmoid region (31.5%) followed by descending colon (23.8%). This correspond to other studies that showed that distal colon was more prone to develop polyps than proximal colon.<sup>25-27</sup> This could be further explained by the environmental factors that could potentially lead to the development of distal colon polyps or tumours such as diet, physical activity, smoking, history of cholecystectomy, chemoprophylaxis agents, reproductive and hormonal status.

The commonest histopathology of polyp in our patients was adenomas (62.5%), followed by hyperplastic (17.9%) and others (19.6%). Study shows that adenomatous polyps were the precursors of most CRC.<sup>28</sup> Our results were similar to National Polyp study, in which 66.5% of the polyps removed in 2362 patients were adenomatous.<sup>29</sup>

Majority (42%) of the polyps from our study was medium size (5-9mm). In fact, polyp size is an important biomarker that correlates with its risk of cancer and guides its clinical management.<sup>30</sup>

Retrospective study had its own weakness, that certain data, such as endoscopy withdrawal time, timing of the procedure, and bowel preparation were unable to be standardized. However, the retrospective design also was a strength on the opposite view, that it provided information in our actual clinical practice. It reduces the biases of highly controlled studies, in which the colonoscopy can be performed more diligently than during routine practice. This study was not population-based; therefore, our patients could have the bias in selection. Moreover, our samples included mostly symptomatic patients, in which the estimates may be different from screening studies with asymptomatic individuals. Family history was also not studied in this study due to unstandardized retrospective study.

## CONCLUSION

In conclusion, the PDR was 20% and ADR is 19.1% in the Serdang Hospital. Gender and age were the most important predictors for the prevalence of adenomas while PDR in all the ethnicity were nearly equal.

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## CONFLICT OF INTEREST

All authors declare no competing conflict of interest.

## FINANCIAL DISCLOSURE

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