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Factors influencing the effectiveness of colonoscopy

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ABSTRACT

Colonoscopy is one of the most widely-used procedures for diagnostic examination and treatment of colorectal diseases, either benign or malignant. Colonoscopy results are influenced by several factors such as current medical history, history of drug use, history of accompanying illnesses, and procedures performed. To analyze the factors which affectiverness the results of colonoscopy among the undergoing patients in Regional Public Hospital of Banyumas. The method used was observational analytic with a cross sectional approach. From the consecutive sample selection, it gave 76 respondents. The analysis was done using Univariate analysis with frequency distribution test, bivariate with chi square test and multivariate with multiple logistic regression test. Most of the respondents (51 respondents, 67.1%) aged 46-65 years and most of them were female (41 or 53.1%), they were dominated by high school graduates (56 or 73.7%), and the dominant occupation status was undemployed (31 or 40.8%). The results of the chi square test showed that there was an effect of current disease history, namely complaints / indications for colonoscopy examinations (p 0.011), drug use (p 0.021),accompanying disease history (p 0.003), and implementation procedures (p 0.000) on colonoscopy results. The results of multiple logistic regression showed that the factor that mostly influences the colonoscopy results was the length of preparation time (1-2 days of preparation).In conclusion current medical history, drug use history, accompanying medical history, and procedure administration significantly influence the colonoscopy outcome. And the most influencing factor is the length of preparation time (1-2 days of preparation).

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1. INTRODUCTION

The Colonoscopy is one of the most widely used procedures for diagnostic testing and treatment of both benign and malignant colorectal diseases. The morbidity rate in patients undergoing colonoscopy was found to be both psychological and physiological. The main morbidity in the asymptomatic patient was major bleeding (0.8/1000 procedures, 95% CI 0.18-1.63) and perforation (0.07/1000 procedures, 95% CI 0.006-0.17) [1]. Poor bowel preparation does not only weaken the protective role of the colonoscopy, but also causes an additional examination(s). This can increase the medical costs or the number of complications associated with the procedure. In addition, the poor bowel preparation is a major cause of colorectal cancer interval. The risk of undetectable colorectal cancer is two to three times higher with poorly prepared bowel compared with cases with excellent preparation. Another impact of the unclean colon preparation on the patient during colonoscopy is the lengthening of the colonoscopy procedure so that the discomfort or pain of the patient will get longer [2].

Based on preliminary studies, in July and August 2019, there were 57 patients who underwent colonoscopy in the endoscopy room of Banyumas Hospital. Of the 57 patients, there were 30 patients with good colon hygiene, or about 53%. Meanwhile, 27 patients (47%) had poor colonic hygiene. Among the 27 patients whose colon preparations were not clean, it was found that some of the examinations were postponed the next day. A longer examination also occured because it required spraying feces covering the lumen, as

well as incomplete examination of the cecum colon, as it was blocked by feces, making the diagnosis of the disease not clear.

2. RESEARCH METHOD

This study used an analytical observational method with a research design using a cross sectional approach. This research was conducted at Banyumas Hospital, which is located at Jl. Rumah sakit No. 1, Banyumas District, Banyumas Regency, in the Medical Record room and Endoscopy room, in December 2019. The sampling technique we did was nonprobability sampling, i.e. consecutive sampling, by determining subjects who met the research criteria included in the certain period, and it left 76 samples. The samples were taken by taking data from electronic documents of the endoscopy room and medical records from 16-31 December 2019.

The independent variables in this study were factors that influenced the colonoscopy results, namely patient characteristics (age, gender, education, occupation), current medical history (complaints / indications for examination, and history of certain drugs use), history of accompanying diseases (Diabetes Mellitus, Hypertension, stroke, dementia, history of abdominal surgery (intestinal / gastric), and colonoscopy procedures (length of preparation time, and the preparation regimen used), while the dependent variable was the colonoscopy result. This study used an observation sheet instrument in data collection, namely a sheet containing several statements accompanied by answers in the form of a check list filled out by the researcher. The data analysis used univariate, bivariate and multivariate analysis. Univariate analysis with frequency distribution test, bivariate with chi square test and multivariate with multiple logistic regression test.

3. RESULTS AND DISCUSSIONS

Table 1. Characteristics (age, gender, education, occupation) of the respondents

Characteristics	Frequency	Procentage
Age		
18-45 yrs	25	32.9%
46-65 above yrs	51	67.1%
Gender		
Male	35	46.1%
Female	41	53.9%
Education		
Primary	20	26.3%
Secondary	56	73.7%
Occupation		
Unemployed	31	40.8%
Farmer	11	14.5%
Enterpreneur	21	27.6 %
Civil servants/retired	9	11.8 %
others: trader, labour	4	5.3 %

Table 2. Influence of complaints/indications, certain drugs use history, comorbidity history, the examination preparation length, and regimens used to the colonoscopy results

Variables	Colonoscopy Result				Total		p-value
	Not good/ Not cleaned		Good / Clean				
	f	%	f	%	n	%	
Complaints	14	51.9	11	2.4			0,011
Hematozechia					25	32.9	
Chronic diarrhea	2	7.4	19	38.8	21	27.6	
Chronic constipation	9	33.3	17	34.7	26	34.2	
Suspected of tumors and polyps	2	7.4	2	4.1	4	5.3	
Drugs use							
No drug use	13	48.1	11	22.4	24	31.6	0.021
Use certain drugs	14	51.9	38	77.6	52	68.4	

History of comorbidity							
No comorbidity	20	74.1	19	38.8	39	51.3	0.003
With comorbidity	7	25.9	30	61.2	37	48.7	
Lenght of preparation							0.000
No preparation	20	74.1	6	12.2	26	34.2	
1-2 day(s) preparation	7	25.9	43	87.8	50	65.8	
Regimen used							0.001
Only fleet enema (no dulcolac)	23	85.2	22	44.9	45	59.2	
Dulcolac and fleet enema	4	14.8	27	55.1	31	40.8	

Table 3. Factor mostly affecting the colonoscopy results

Variables	**Coefficients unstandardized**		**95% CI**	**p-value**	**Odds Ratio**
	B	**SE**			
Drug use	0.49	0.69	0.42-6.36	0.477	1.64
Preparation time	2.46	0.74	2.74-49.80	0.001	11.76
Used regimen	1.54	0.72	1.14-19.11	0.033	4.66
History of comorbdityt	0.57	0.74	0.41-7.49	0.444	1.76
Constant	-7.02	1.888		0.000	0.001

Based on the analysis, it showed that the chi square test obtained p value of 0.011, meaning there is an effect of current disease history, which is an indication of colonoscopy examination (complaints), on the colonoscopy results. In the variable of drug use, it results in p value of 0.021. Thus, there is an effect of drug use on colonoscopy results. The similar result is also seen in the comorbidity history factor, with p value of 0.003; the accompanying disease history does have an effect the procedure. This is also the case with other two variables of the lenght of preparation and the used regimen(s), with their chi square tests obtain a p value of 0.000 and of 0.001 respectively. This means that the two do influence the colonoscopy results. Based on the logistic regression test, the most influencing factor was the length of preparation time, which had a greater chance than other variables to 11.76 times to produce a clean / good colonoscopy. The results of this study are in line with the findings of proving that an adequate bowel preparation is essential to ensure adequate visualization of the colonic mucosa and to optimize the detection of lesions for successful colonoscopy used for CRC (Colorectal Cancer) screening [3].

4. CONCLUSION

Based on the analysis of their demographic characteristics, most of the respondents (51 respondents, or 67.1%) aged 46-65 years and above, and most of them (41 or 53.1%). From their education, the most are secondary education graduates, and the dominant group (40.8%) do not work, unemployed. All the factors studied in this research are proved to have significant effects on the colonoscopy results. They are the history of the current disease, i.e.complaints / indications for colonoscopy examinations, history of their drug use, history of comorbidity, including intestinal/gastric surgery, colonoscopy implementation procedures, and examination preparation, namely the length of preparation time, and the used regimen. It is found out that The factor that mostly influences the colonoscopy results is the length of preparation time, as it is seen in its p value of 0.001, having the greatest odds ratio of 11.76.

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