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Chronic constipation among community-dwelling older people in the East Coast region of Peninsular Malaysia

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Abstract

Background: This study aimed to investigate the prevalence, symptoms, and factors associated with chronic constipation among community-dwelling older people in the East Coast region of Peninsular Malaysia. **Methods:** A cross-sectional study was conducted in four selected health clinics using stratified cluster sampling. A face-to-face interview was carried out among the elderly outpatients, in order to complete a structured questionnaire. **Results:** A total of 400 participants were included in the study. The mean age was 68.7 ± 6.4 years, and 55% of the cohort were women. The prevalence of chronic constipation was 32.3% among the sample population. The most common symptom was “sensation of incomplete evacuation” (63.6%), and none of the participants reported having “less than three defecations per week,” “straining,” or “lumpy or hard stool.” Educational level ($p = 0.005$), number of defecations per week, stool form, time spent for defecation, and abdominal bloating were significantly associated with chronic constipation ($p < 0.001$). **Conclusion:** Chronic constipation was common in older people and associated with a low educational level. Recognition of symptoms was predominantly based on clinical features of constipation and will require the healthcare providers to consider these factors in their routine assessment of older people.

Keywords: constipation, elderly, symptoms, Malaysia

Introduction

Chronic constipation is common, but studies among older people are limited, especially in Southeast Asian countries.^{1,2} Several studies have reported a wide variation in the prevalence of chronic constipation among community-dwelling older people, ranging from 16.5% to 75% of the population in question.^{1,3-5} Nevertheless, a lack of knowledge and understanding among older people of the symptoms may result in under- or over-reporting of its occurrence.

Recognizing constipation symptoms will ensure an accurate diagnosis. Based on the Rome III diagnostic criteria, constipation symptoms comprise straining, sensations of incomplete evacuation, sensations of anorectal obstruction or blockage, using manual maneuvers to facilitate defecations, and having less than three spontaneous bowel movements per week.⁶ Chronic constipation is indicated when these symptoms persist for at least three months.⁷ Internationally, the most frequent symptom was straining and the least was using manual maneuvers to facilitate defecation.^{8,9} Nevertheless,

several studies have reported that ethnicity and socio-demographic differences may cause misperceptions of constipation.^{10,11} An inability to recognize the symptoms of constipation will lead to a poorer quality of life, with particular economic and social effects.¹⁰

A recent study has shown that certain socio-demographic factors are associated with chronic constipation among older people. These factors are as follows: being female, being of an older age, having no formal education, engaging in mentally challenging work, living in urban areas, and living without a spouse.^{9,12} Nevertheless, in Malaysia, chronic constipation among older people has been overlooked, and little information is available regarding the symptoms and the socio-demographic profiles of sufferers. An early study exploring the experience of older people with chronic constipation in East Coast region of Peninsular Malaysia suggested the possibility of a high prevalence of chronic constipation among the older people when they viewed the symptoms as taboo.¹¹ Thus, this study aimed to examine the prevalence, symptoms, and factors associated with chronic constipation among older people in community settings in the East Coast region of Peninsular Malaysia.

Methods

We conducted a cross-sectional study of elderly outpatients at four selected health clinics in Kelantan, between November 2016 and January 2017. Older people were defined as individuals aged 60 years old and above. The participants were selected using stratified cluster sampling of the health clinics in Kelantan. We included those who had lived in the community of Kelantan for at least 12 months, were able to understand Malay, and had passed cognition screening using the Elderly Cognitive Assessment Questionnaire (ECAQ)¹³ by at least obtaining a minimum score of 5 out of 10. Potential participants were excluded if they had cognitive deficits, such as memory loss, confusion, or dementia, or if they had significantly impaired hearing. They were also excluded if they had a stoma or other gastrointestinal disease or had indications of colorectal cancer, such as weight loss, rectal bleeding, changes in bowel habits in less than three months, and abdominal pain.¹⁴

A total of 461 elderly patients was initially screened for inclusion in the study. This sample size was calculated using a single proportion formula. The estimated proportion was based on the prevalence of chronic constipation from our pilot study which was conducted in a teaching hospital in Kelantan at 53%. After considering an attrition rate of 20% and a precision of 5% with a 95% confidence interval (CI), the calculated sample size was determined as 461.

Questionnaire. The questionnaire consisted of two parts. The first part was designed to collect socio-demographic data on age, sex, marital status, educational level, employment status, personal income, household income, and type of family. The second part was screening to address chronic constipation and its symptoms. We defined chronic constipation as self-reported constipation (with a yes-or-no answer) over the course of the past three months. Constipation symptoms were assessed based on the six criteria of Rome III Malay version which was psychometrically reliable and valid to be used for Malay-speaking population in Malaysia.^{6,15} The symptoms are indicated by the frequency of experience on a 5-point Likert scale from “never/rarely” to “always.” A minimum frequency of “often” for stool frequency of less than three defecations per week, a lumpy or hard stool, and the need to strain will fulfill the symptom. The minimum frequency for the other three symptoms was “sometimes.” Each of the symptom is indicated when a person fulfills at least one-fourth of defecations.⁶

Clinical features of chronic constipation were measured based on defecation position, number of defecations per week, time spent for defecation, and stool form. Defecation position was based on the type of toilet available at home (sitting, squatting, or both). The participants were asked to state their number of

defecations per week and time spent on the toilet to complete defecation. Stool form was determined by asking the participants to select their most frequent stool type within the past two weeks, based on the Bristol stool form scale (BSF).²

Data collection. Data were collected via a face-to-face and personal interview based on a structured questionnaire by the first author and assisted by two trained research assistants. Prior to the data collection, written informed consent was obtained from the participants. This study was approved by the Research Ethics Committee (Human), Universiti Sains Malaysia (USM/JEPeM/272.3. [1.7]), and the Medical Research and Ethics Committee of Malaysian Ministry of Health (NMRR-13-1729-16751 [IIR]).

Data analysis. The IBM SPSS Statistics version 22 (IBM Corp., New York, USA) software was used to analyze the data. The prevalence of chronic constipation and categorical variables were presented by frequency and percentage. The association among constipation symptoms, socio-demographic profiles, and clinical features of chronic constipation was analyzed by transforming the continuous variables (age, frequency of defecation per week, and time spent on the toilet to complete defecation) to the categorical variables and assessed using Pearson’s chi-square test. A multiple logistic regression was computed to determine the adjusted odds ratio with 95% CI of symptoms and clinical features predictors of chronic constipation. Significant level was set at < 0.05.

Results

The participants’ socio-demographic profiles are shown in Table 1. Of the 461 participants approached, 400 completed the questionnaire. The overall response rate was 86.8% with 61 dropouts, mainly because of refusal to participate (n = 16) and did not meet the study criteria (n = 19). The participants who did not meet the criteria were those with hearing problems (n = 5), obtained a low score of the ECAQ (n = 13), and fulfilled the alarm features that indicated possible colorectal cancer (n = 1). Incomplete data were excluded from the analysis (n = 26). The mean age was 68.7 ± 6.4 years, ranging from 60 to 90 years old. Women made up 55% of the sample, and men accounted for 45%. Those of Malay ethnicity accounted for 98.8%, with other ethnicities (Chinese and Siamese) making up the remaining 1.2%.

The prevalence of chronic constipation was 32.3% (n = 129). Constipation symptoms are shown in Table 2. The most commonly occurring symptom among the older people with chronic constipation was a sensation of incomplete evacuation 63.6% (n = 82). Two-thirds of them also had a “sensation of anorectal blockage,” and one-third reported “using manual maneuver to facilitate

defecation.” There was a significant association in presence of the three symptoms between those with and without chronic constipation ($p < 0.001$). None of the participants reported of having less than three defecations per week, straining, and lumpy or hard stools.

The factors associated with chronic constipation are shown in Table 3. Educational level ($p = 0.005$), number of defecations per week, stool form, time spent for defecation, and abdominal bloating ($p < 0.001$) were associated significantly with chronic constipation. Forward LR and backward LR multiple logistic regression model was applied. Multicollinearity and interaction were checked and not found. Hosmer-Lemeshow test ($p = 0.829$), classification table (overall correctly classified percentage = 80%), and area under the ROC curve (75.9%) were applied to check the model fitness. The results of multiple logistic regression of symptoms and clinical features showed that stool types 1 and 2 (OR = 8.06; 95% CI = 4.10–5.85, $p < 0.001$), time spent for defecation of more than 10 min (OR = 3.51; 95% CI = 1.67–7.35, $p = 0.001$), and abdominal bloating (OR = 8.9; 95% CI = 3.55–22.33, $p < 0.001$) were significant independent predictors for chronic constipation in older people (Table 4).

Table 1. Socio-demographic profiles of the participants

Variables	N (%)
Sex	
Men	180 (45.0)
Women	220 (55.0)
Marital status	
Married	277 (69.3)
Single/widowed/divorced	123 (30.8)
Educational level	
Never to school/informal	183 (45.8)
Primary school and above	217 (54.3)
Employment status	
Unemployed	276 (69.0)
Employed/retired	124 (31.0)
Personal income (RM)/month	
<RM 500	146 (36.5)
≥RM 500	254 (63.5)
Household income (RM)/month	
<RM 1000	153 (38.3)
RM 1000–RM 1999	112 (28.0)
≥RM 2000	135 (33.8)
Types of family	
Alone	36 (9.0)
Dyad	115 (28.8)
Nuclear	93 (23.3)
Others	156 (39.0)

RM = Ringgit Malaysia.

Table 2. Constipation symptoms

Variables	Chronic constipation		N = 400 (%)	p
	Yes (N = 129) n (%)	No (N = 271) n (%)		
Fewer than three defecation per week				
Yes	0	0	0	
No	129 (100)	271 (100)	400 (100)	
Lumpy or hard stool				
Yes	0	0	0	
No	129 (100)	271 (100)	400 (100)	
Straining				
Yes	0	0	0	
No	129 (100)	271 (100)	400 (100.0)	
Sensation of incomplete evacuation				
Yes	82 (63.6)	41 (15.1)	123 (30.8)	<0.001*
No	47 (36.4)	230 (84.9)	277 (69.2)	
Sensation of anorectal blockage				
Yes	81 (62.8)	36 (13.3)	117 (29.3)	<0.001*
No	48 (37.2)	235 (86.7)	283 (70.7)	
Manual maneuver to facilitate defecation				
Yes	44 (34.1)	17 (6.3)	61 (15.3)	<0.001*
No	85 (65.9)	254 (93.7)	339 (84.7)	

* p value < 0.05

Table 3. Associated factors of chronic constipation

Variables	Chronic constipation (N = 400)		p
	Yes (N = 129) N (%)	No (N = 271) N (%)	
Age (years)			
60–69	71 (55.0)	169 (62.4)	0.117
70–79	44 (34.1)	87 (32.1)	
>80	14 (10.9)	15 (5.5)	
Sex			
Men	58 (45.0)	122 (45.0)	0.991
Women	71 (55.0)	149 (55.0)	
Marital status			
Married	81 (62.8)	196 (72.3)	0.053
Single/widowed/divorced	48 (37.2)	75 (27.7)	
Educational level			
Never to school/informal	72 (55.8)	111 (41.0)	0.005*
Primary school above	57 (44.2)	160 (59.0)	
Employment status			
Unemployed	93 (72.1)	183 (67.5)	0.356
Employed/retired	36 (27.9)	88 (32.5)	
Personal income (RM)/month			
≥RM 500	77 (59.7)	177 (65.3)	0.275
<RM 500	52 (40.3)	94 (34.7)	
Household income (RM)/month			
<RM 1000	49 (38.0)	104 (38.4)	0.594
RM 1000–RM 1999	40 (31.0)	72 (26.6)	
≥RM 2000	40 (31.0)	95 (35.1)	
Types of family			
Alone	9 (7.0)	27 (10.0)	0.129
Dyad	33 (25.6)	82 (30.3)	
Nuclear	26 (20.2)	67 (24.7)	
Others	61 (47.3)	95 (35.1)	
Number of defecations per week			
0–2	21 (16.3)	4 (1.5)	<0.001*
>3	108 (83.7)	267 (98.5)	
Bristol stool form scale			
Types 1 and 2	56 (43.4)	15 (5.5)	<0.001*
Types 3–7	73 (56.6)	256 (94.5)	
Position in defecation			
Sitting	36 (27.9)	79 (29.2)	0.596
Squatting	58 (45.0)	108 (39.8)	
Both	35 (27.1)	84 (31.0)	
Time spent for defecation (min)			
≤10	90 (69.8)	255 (94.1)	<0.001*
>10	39 (30.2)	16 (5.9)	
Abdominal bloating			
No	94 (72.9)	7 (2.6)	<0.001*
Yes	35 (27.1)	264 (97.4)	

*p value < 0.05

Table 4. Independent predictors of chronic constipation by multiple logistic regression

Variable	b	Adjusted OR (95% CI)	p
Bristol stool form scale			
Types 3–7	0	1	<0.001
Types 1 and 2	2.09	8.06 (4.10–15.85)	
Time spent for defecation (min)			
≤10	0	1	0.001
>10	1.26	3.51 (1.67–7.35)	
Abdominal bloating			
No	0	1	<0.001
Yes	2.19	8.90 (3.55–22.33)	

b = regression coefficient; OR = odds ratio.

Discussion

Our findings show that the prevalence of chronic constipation among the older people was 32.3%, which is still within the range reported in the literature. This prevalence was based on incomplete evacuation, having a sensation of anorectal blockage, and using manual maneuvers to facilitate defecation. Educational level, number of defecations per week, stool form, time spent for complete defecation, and abdominal bloating played an important role in identifying chronic constipation. Out of these, BSF types 1 and 2, time spent for defecation of more than 10 min, and abdominal bloating were independent predictors for the older people reporting chronic constipation. In previous studies, the prevalence of chronic constipation was higher among older people in Western countries^{5,16–18} than in Asia (21% to 75% vs. 16.5% to 25.8%).^{4,9,19,20} Previous studies suggested that a high prevalence was probably due to the study population consisting of high-risk populations, such as nursing home residents^{16,21} and women,⁵ and the use of self-reporting or questionnaires.¹ A study of older people's households in Indonesia found that the prevalence was 16.5%, which was lower than of this study. Indonesia and Malaysia share same culture, and the study also used a similar method that was utilized in this one to diagnose chronic constipation.⁴ The researchers concluded that the difference in the results may be due to our study population consisting of elderly patients with poorer health status.

The majority of studies have reported that straining, lumpy and hard stools, and a sensation of incomplete evacuation are three core constipation symptoms.^{8,22–24} Nevertheless, our findings show that older people perceive chronic constipation based on the less frequent symptoms. This mismatch demonstrates that constipation misperception is common in older people, and thus supports our early study findings.^{10,11} We suspected that this misperception may even have resulted in underreporting the prevalence of chronic constipation in the current study.¹¹

Our study found that passing stool form types 1 and 2, spending more than 10 min for defecation, and abdominal bloating were perceived as convincing factors to recognize chronic constipation. Thus, neglect of these clinical features might result in the underreporting of constipation symptoms, which in turn would lead to a failure to detect chronic constipation. The findings of this study are consistent with previous studies, in that being illiterate and having a low educational level was associated with chronic constipation.^{9,12,25} This suggests that educational level was associated with lack of knowledge of chronic constipation, particularly in terms of prevention, which led to a poorer quality of life.^{25,26} Our data have contributed to the existing body of knowledge on chronic constipation among older people,

particularly regarding constipation symptoms. Nevertheless, some limitations of this study should be acknowledged. This study was conducted among older people with a poor health status, and most of them were less than 80 years old. The use of laxatives among older people in this study was also not taken into account. This might lead to biases in determining the prevalence and associated factors. Furthermore, we did not measure other factors, such as existing diseases, medication consumption, fluid and dietary fiber intakes, and physical activity, which are important factors that contribute to chronic constipation in older people.^{1,2,17,20}

Conclusion

Our findings suggest that chronic constipation is substantially prevalent in older people in community settings in the East Coast region of Peninsular Malaysia, especially among those with a low educational level. Constipation misperception was common when the less frequent symptoms presented themselves. This study recommends that healthcare providers consider educational level and clinical features related to defecations in their routine assessments of older people, in order to make accurate diagnoses of chronic constipation. Further research is warranted to examine the prevalence and symptoms of chronic constipation in other age groups of adult population as well as to investigate other important factors that contribute to chronic constipation.

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Conflict of Interest Statement

None declared.

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