

Prevalence of constipation and lifestyle risk factors related to constipation in an adult population of South Tangerang

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ABSTRACT

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Background: Constipation is a common bowel complaint in a general population that can negatively impact a quality of life. Unhealthy lifestyles play major roles in causing the constipation.

Objective: This study was aimed to estimate prevalence of the constipation and identify lifestyle risk factors related to constipation in a general adult population.

Methods: A cross-sectional survey was conducted on 227 adults aged ≥ 20 years, who lived in East Ciputat, South Tangerang. Information about demographic characteristics, lifestyle habits, and bowel habits was collected through in-person interviews. Chi-square test and logistic regression were used for data analysis.

Results: The prevalence of self-reported constipation in the general adult population was 21.6%. The common symptoms included defecation time ≥ 5 minutes (39.6%), sensations of incomplete evacuation (37.9%), and frequency of defecation < 1 /day (34.4%). Married status was related to a decreased risk of constipation (odds ratio = 0.31; 95% confidence interval = 0.11-0.89). Lifestyle factors of smoking, sedentary job, body mass index, and physical activity were less related to the risk of constipation.

Conclusion: The prevalence of constipation was relatively high in the general adult population in South Tangerang. Further studies are needed to explore the relationships between lifestyle risk factors and constipation in other populations.

Latar Belakang: Konstipasi/sembelit adalah keluhan yang umum di populasi dan dapat berdampak negatif terhadap kualitas hidup. Gaya hidup yang tidak sehat mempunyai peran penting dalam menyebabkan konstipasi.

Tujuan: Penelitian ini bertujuan untuk memperkirakan prevalensi konstipasi dan mengidentifikasi faktor risiko gaya hidup yang berhubungan dengan konstipasi pada orang dewasa.

Metode: Desain penelitian kros-seksional digunakan dengan melibatkan 227 orang dewasa berumur ≥ 20 tahun, yang tinggal di Ciputat Timur, Tangerang Selatan. Informasi mengenai karakteristik demografi, gaya hidup, dan kebiasaan buang air besar dikumpulkan dengan wawancara langsung. Data dianalisis menggunakan uji chi-square dan analisis regresi logistik.

Hasil: Prevalensi konstipasi pada orang dewasa ditemukan sebanyak 21.6%. Gejala umum konstipasi antara lain waktu buang air besar ≥ 5 menit (39.6%), sensasi tidak lengkap (37.9%), dan frekuensi buang air besar < 1 / hari (34.4%). Status menikah berhubungan dengan penurunan risiko konstipasi (odds rasio = 0.31; 95% interval kepercayaan = 0.11-0.89). Faktor risiko gaya hidup merokok, pekerjaan sedentary, indeks massa tubuh, dan aktifitas fisik tidak berhubungan dengan risiko konstipasi.

Kesimpulan: Prevalensi konstipasi cukup tinggi pada orang dewasa di Tangerang Selatan. Penelitian lebih

lanjut diperlukan untuk mengeksplorasi hubungan antara faktor risiko gaya hidup dengan konstipasi pada populasi lainnya.

INTRODUCTION

Constipation is a common symptom characterized by unsatisfactory defecation that results from infrequent stools, difficult stool passage, or feeling of incomplete defecation.¹ Many studies have assessed prevalence of constipation in general adult populations, and their findings are highly heterogeneous with prevalence rates ranging from 2.6% to 30%.²⁻⁴ However, there are very limited studies on constipation in Indonesian adults, and one of them can be seen in a cross-sectional study in Banda Aceh reporting that prevalence of constipation among adult participants was 66.7%.⁵ Even though constipation is largely unreported and its complaint is when only in a chronic condition, mounting evidence have indicated that chronic constipation affects a person's health-related quality of life, resulting from economic burden for both its patients and healthcare systems.⁶⁻¹⁰

Previous studies have found that constipation is related to many factors such as age, gender, socioeconomic status, dietary habit, education level, anxiety, depression and psychological factor.^{1,11} In addition, chronic constipation is more common in women with rates of 2 to 3 times higher than in men.^{3,12} Although many studies have assessed magnitude of functional constipation and its factors in other countries, evidence from Indonesia is limited. Furthermore, better understanding of the constipation prevalence in adult population and its related lifestyle characteristics can benefit for its management. The aims of this study were to measure the prevalence of constipation and identify lifestyle factors with occurrence of constipation in adults from the general population.

METHODS

Study design and participants

Data of this study were derived from a cross-

sectional study conducted from June to November 2015 in East Ciputat, South Tangerang. The participants were adults defined by the World Health Organization (WHO), and they were living in the East Ciputat of South Tangerang District.¹³ A purposive sampling technique was used to select participants. Eligible participants were adults whose age were at least 20 years old living in the study area, had never been diagnosed to have fecal incontinence, and were mentally competent to give informed consent and to complete the interview. Sample size of this study was calculated by using adults' constipation prevalence of 30%, power level of 80%, confidence level of 95%, and odds ratio of 2.2.⁴ It was required at least 238 participants in data analysis. A total of 250 eligible participants were then contacted to participate in this survey, but 23 individuals were not able to participate during the study so that a total of 227 participants was in the final analysis (response rate = 90.8%). Written consent was obtained from all the participants, and the study protocol was approved by the Research Ethics Committee of the Faculty of Medicine and Health Sciences, Universitas Islam Negeri Syarif Hidayatullah (UIN) Jakarta Indonesia.

Data collection

In-person interview was conducted at participations' houses by well-trained interviewers by using a structured questionnaire, which included demographic characteristics (gender, age, education, and marital status), lifestyle habits (smoking habit, types of job, and physical activity), and bowel habits. Bowel habits in at least three months before the study were ascertained by closed-ended questions regarding constipation, frequency of bowel movements, consistency of stool, abdominal distention, feeling of incomplete evacuation, time required for defecation, regularity of bowel movements, and use of laxatives. Eight answers were prepared for the question on the frequency of bowel movements, and 5 answers were given to the question on the time for defecation. In

the analysis, frequency of bowel movements and consistency of stool were divided into 3 categories. Regularity of the bowel habit and feeling of incomplete evacuation were answered dichotomously. Three to four answers were prepared for the remaining questions, and they were further divided into 2 categories in the analysis. Referring to Rome III criteria, functional constipation was defined if two or more of the following five symptoms during the last 3 months (minimum) before this study were reported. The symptoms were less than one bowel movement per 3 days, having hard stools, feeling of incomplete evacuation, taking more than 5 minutes to have a bowel movement, and laxative use more than once per week.¹⁴

Body mass index (BMI, kg/m²) was estimated by reporting height (cm) and body weight (kg). Smoking habit was categorized into non-smoking and ever smoking. Information of types of job and physical activities was ascertained. Types of job were categorized into sedentary (clerical work, taxi driving, housework), work with walking (delivery by walking, patrolling on foot), labor work (construction work, agricultural work, load transport), hard labor work (digging or chopping with heavy tools, carrying heavy loads), and no job (including students).^{15,16} Physical activities were expressed as a sum of metabolic equivalents (MET) multiplied by hours of weekly participation in each activity. In the analysis, the types of job and physical activities were divided into 2 categories.

Statistical analysis

Descriptive data were presented by using means, standard deviations, or frequency as indicated. Comparisons between constipation groups (yes/no) were conducted by the χ^2 test for categorical data and by *t* test for continuous data (age, height, and BMI). Variables with *p*-value <0.250 on the bivariate analysis were entered to multivariate logistic regression model to identify their independent effects. *p*-value and 95% confidence interval (CI) for odds ratio (OR) were used to determine significances of

relationships of the obtained data. A two-sided *p*-value <0.05 was considered as statistically significant. Statistical analyses were calculated by using SPSS software (SPSS, Inc., version 17.0).

RESULTS

More than half of participants (61%) were female and their mean age was 48.9 years. Majority of them were married (80%), and more than half of them had high school degree (57%). Mean height and BMI were 158.4 cm and 23.7 kg/m², respectively, while 39% of them had BMI ≥ 25 kg/m² and were classified as overweight. A 26% of them were ever smokers, 16% of them had sedentary job, and 26 % were physically active (Table 1).

Table 1. Characteristics of participants

Characteristics	n* (%)
Gender	
Female	139 (61.2)
Male	88 (38.8)
Age, year**	48.9 \pm 11.9
Education	
Elementary school	50 (22.2)
High school	128 (56.4)
University	49 (21.6)
Marital status	
Single	22 (9.7)
Married	181 (79.7)
Widowed/divorced	24 (10.6)
Height, cm**	158.4 \pm 5.8
BMI, kg/m ² **	23.7 \pm 4.5
Ever smoking	59 (26.0)
Sedentary job	37 (16.3)
Physically active	59 (26.0)

*Number

**Data are presented as mean \pm standard deviation

Table 2 shows prevalence of constipation and bowel habit characteristics of the participants. The prevalence of self-reported constipation was 21.6%, and functional constipation was

defined for 29.1% based on Rome III criteria. The frequency of bowel movement of <1 per day was 34.4%, while stool consistency reported as hard was 10.1%. A 55.1% of participants had

abdominal distention, 37.9% were in incomplete evacuation, 39.6% had defecation time of ≥ 5 minutes, 13.7% experienced irregular bowel movement, and 10.1% used laxatives (Table 2).

Table 2. Prevalence of constipation and bowel habit characteristics

Bowel habit characteristics	n* (%)
Self-reported constipation	49 (21.6)
Functional constipation	66 (29.1)
Stool frequency	
>1/day	24 (10.6)
1/day	125 (55.1)
<1/day	78 (34.4)
Stool consistency	
Hard	23 (10.1)
Normal	177 (78.0)
Loose	27 (11.9)
Abdominal distention	
No	102 (44.9)
Yes	125 (55.1)
Incomplete evacuation	
No	141 (62.1)
Yes	86 (37.9)
Defecation time, minutes	
<5	137 (60.4)
≥ 5	90 (39.6)
Regularity	
Regular	196 (86.3)
Irregular	31 (13.7)
Laxative use	
No	204 (89.9)
Yes	23 (10.1)

*Number

Self-reported constipation according to demographic and lifestyle factors are presented in Table 3. The constipation was higher in female than in male, while mean (\pm SD) age of participants reporting constipation

and without constipation were 49.4 (± 0.8) years and 47.1 (± 1.7) years, respectively. Participants with constipation were more likely to have high school degree, less likely to be married, taller, and lower in their BMI,

and more physically active than those without constipation. Ever smoking and sedentary job were more frequent in participants with constipation than those without constipation. In addition, married status was significantly related to self-reported constipation (Table 3).

Table 3. Self-reported constipation according to demographic and lifestyle variables

Characteristics	Constipation	Without constipation	p-value
	n* (%)	n* (%)	
Gender			
Female	29 (59.2)	110 (61.8)	-
Male	20 (40.8)	68 (38.2)	0.74
Age, year**	47.1 ± 1.7	49.4 ± 0.8	0.20
Education			
Elementary school	12 (25.5)	38 (21.5)	-
High school	28 (59.6)	100 (56.5)	0.76
University	9 (18.4)	40 (22.5)	0.49
Marital status			
Single	10 (20.4)	12 (6.7)	-
Married	34 (69.4)	147 (82.6)	0.01
Widowed/Divorced	5 (10.2)	19 (10.7)	0.08
Height, cm**	160.4 ± 1.3	157.9 ± 0.6	0.08
BMI, kg/m ² **	23.3 ± 0.7	23.9 ± 0.3	0.37
Smoking			
Non-smoking	36 (73.5)	131 (73.6)	-
Ever smoking	13 (26.5)	47 (26.4)	0.79
Type of job			
Non-sedentary	38 (77.6)	152 (85.4)	-
Sedentary	11(22.4)	26 (14.6)	0.19
Physical activity			
No	33 (67.4)	135 (75.8)	-
Yes	16 (32.6)	43 (24.2)	0.23

*Number; **Data are presented as mean ± standard deviation

Table 4 presents crude and adjusted ORs for self-reported constipation of the adults. The ORs for body height and sedentary job were greater than unity. Participants who were married and physically active showed a moderate decrease in ORs of constipation, and the decrease in the

ORs in married participants was statistically significant in multivariate analysis. Repeated analysis for functional constipation showed similar results with those of self-reported constipation.

Table 4. Crude and Adjusted ORs for self-reported constipation among adults

Characteristics	n*	Crude OR (95% CI)	Adjusted OR (95% CI)	P value
Age, year	49/178	0.98 (0.96-1.01)	1.00 (0.96-1.03)	0.93
Marital status				
Single	10/12	1.00	1.00	
Married	34/147	0.28 (0.11-0.69)	0.31 (0.11-0.89)	0.02
Widowed/Divorced	5/19	0.32 (0.09-1.15)	0.42 (0.09-1.89)	0.26
Height, cm	49/178	1.03 (1.00-1.07)	1.02 (0.98-1.06)	0.25
Type of job				
Non-sedentary	38/152	1.00	1.00	
Sedentary	11/26	1.69 (0.77-3.72)	1.56 (0.67-3.62)	0.30
Physical activity				
No	33/135	1.00	1.00	
Yes	16/43	0.66 (0.32-1.31)	0.84 (0.40-1.78)	0.65

*Number of self-reported constipation/without constipation

DISCUSSION

In this study, the prevalence of constipation was relatively high. Marital status was significantly related to a decreased risk of constipation. However, this study indicated that lifestyle factors of smoking, sedentary job, BMI, and physical activity were less related to risks of constipation.

Constipation can be caused by various factors, including primary and secondary causes. Primary causes are intrinsic problems of colonic or anorectal function, whereas secondary causes are related to diseases or medications.¹⁷ In addition, the constipation is variously defined according to self-reported constipation and formal criteria.¹⁸ The findings in this study showed that the prevalence of constipation was 21.6% for self-reported constipation and 29.1% for functional constipation based on Rome III criteria. These findings were similar to prevalence of 26.9% by the Rome III criteria and 25.6% of prevalence by self-reporting in general Brazilian adult population.¹⁹ Increased rates were also reported in South Korea (25.8%), France (22.4%), and Iran (22.9%).²⁰⁻²² However, lower prevalence rates (14.6% and 2.1%) were found in Brazil and Spain.²³⁻²⁴ Constipation was defined by the Rome III criteria in the earlier

study and on self-reports in the latter study. The -various results may be partially due to different variability in methods used to measure the prevalence, including differences in criteria to define constipation and the age distributions of population study.^{3,4}

In this study, the most frequent symptom of constipation was abdominal distention (55.1%), followed by defecation time ≥ 5 minutes (39.6%), sensations of incomplete evacuation (37.9%), and frequency of defecation <1 /day (34.4%). Similarly, findings from a systematic review showed that Asians perceived a range of symptoms at varying frequency from 10% to 98.4%, whereas straining, incomplete evacuation, and hard and lumpy stool were symptoms reported more frequently among adult Asians.²⁵ In the West countries, hard and lumpy stool was more frequent than the sensation of incomplete evacuation.²⁵ These findings suggest that adult participants perceived constipation somewhat differently as any form of difficult defecation, while health care professionals typically define constipation by the frequency of bowel movements.^{20,26}

Potential lifestyle risk factors for constipation were also evaluated in this study. Previous studies reported that constipation was more

perceived by females than by males.^{2, 6, 11, 20, 27} Some studies also observed that the prevalence rates increased with age.^{1, 4, 23} In this study, self-reported constipation was not significantly different in relation to participants' gender, age, and level of education. Interestingly, this study found that constipation was significantly lower in married individuals. Marital status affected the level of constipation misperception although development of chronic constipation was not influenced by marital status.^{28, 29} It is likely that married individuals may have better recognition of constipation symptoms because their potentially constipated spouses inform these individuals about the symptoms. Poor lifestyle habits have also been suggested as important risk factors for constipation; however, this study did not observe the relationships of smoking, sedentary job, BMI, physical activity with the constipation.³⁰

Advantages of this study included that bowel habits were evaluated among adults in the community, and that multi-facets of bowel habits were evaluated in relation to self-reported constipation. However, several limitations of this study should be acknowledged. For example, other factors potentially related to constipation such as dietary habits, medications, and multiple comorbid conditions were not examined in this study. In addition, a causal relationship between constipation and risk factors could not be determined due to cross-sectional design.

CONCLUSION

The prevalence of self-reported constipation in this general adult population was moderately high (21.6%). Marital status was related to a decreased risk of constipation. Lifestyle factors of smoking, sedentary job, BMI and physical activity were unrelated to the risks of constipation. Further studies with larger sample and long-term follow-up are required to explore the relationships between these factors and the risk of constipation in other populations.

CONFLICT OF INTEREST

None

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