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Determining the Constipation Status and Associated Factors in the Elderly People Receiving Institutional Care

Kurumsal Bakım Alan Yaşlıların Konstipasyon Durumları ve İlişkili Faktörlerin Belirlenmesi

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ABSTRACT

Objective: The study aims to determine the constipation status and associated factors in elderly people receiving institutional care.

Materials and Methods: This descriptive and analytic research was conducted with 108 elderly people in three institutional care centers in a province in Türkiye. Data were collected with the Individual Characteristics Form, the Mini-Cog© test, and the International Physical Activity Questionnaire–Short Form. Diagnosis of constipation was made according to the Rome IV criteria.

Results: The average age of the participants was 74.16±7.51, 74.1% were female, and 46.3% were receiving institutional care for 2-4 years. It was found that 46.3% of the elderly had constipation and 72% were using laxatives. The prevalence of constipation was found to be statistically significantly higher among females, elderly people receiving institutional care for one year or less, physically inactive elderly who habitually delay defecation and elderly people who consume insufficient amounts of water ($p<0.05$).

Conclusions: The results of the study revealed that one out of the two elderly people suffers from constipation. Thus, preventive care interventions such as diet and exercise programs, and exercises for bowel habits must be applied by determining the risk factors of constipation in elderly people.

Keywords: Constipation, defecation, elderly, laxatives, old age homes

ÖZ

Amaç: Bu çalışmanın amacı uzun süreli kurumsal bakım alan yaşlıların konstipasyon durumları ve etkileyen faktörlerin belirlenmesidir.

Materyal ve Metot: Tanımlayıcı ve analitik türdeki çalışma, bir ilde bulunan üç kurumsal bakım merkezinde yaşayan 108 yaşlı ile yapıldı. Veriler Bireysel Özellikler Formu, Mini-Cog testi ve Uluslararası Fiziksel Aktivite Anketi Kısa Formu ile toplandı. Konstipasyon tanılaması Roma IV kriterlerine göre yapıldı.

Bulgular: Yaş ortalaması 74,16±7,51 olan yaşlıların % 74,1'i kadın ve %46,3'ü 2-4 yıldır kurumsal bakım almaktadır. Yaşlıların %46,3'ünde konstipasyon sorunu olduğu, %72'sinin laksatif kullandığı belirlendi. Kadınlarda, 1 yıl ve daha az süredir kurumsal bakım alanlarda, fiziksel olarak inaktif olanlarda, defekasyonu erteleme alışkanlığı olanlarda, günlük su tüketimi yetersiz olanlarda konstipasyon görülme oranının anlamlı düzeyde yüksek olduğu belirlendi ($p<0,05$).

Sonuç: Çalışmanın sonucunda kurumsal bakım alan iki yaşlının birinde konstipasyon görüldüğü belirlendi. Yaşlılarda öncelikle konstipasyon risk faktörleri belirlenerek, diyet ve egzersiz programları, tuvalet eğitimi gibi önleyici bakım girişimleri uygulanmalıdır.

Anahtar Kelimeler: Dışkılama, konstipasyon, laksatifler, yaşlı, yaşlı evleri

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INTRODUCTION

Constipation is a common health problem that negatively affects health-related quality of life due to decreased physical, mental, and social well-being. The incidence of constipation increases with age and is more common in females. While the rate of constipation for the 65-83 age group is 26% for females, and 16% for males living in society, this rate climbs to 34% for females, and 26% for males in the >84 age group.[1-3] According to studies conducted with elderly people in institutional care in Türkiye, however, the rate of constipation was 44.6%, strain during defecation was 50.9%, and severe intestinal gas complaints were 45.7%.[4,5]

Constipation is not a disease but a symptom and has many potential causes for people in old age. Age-associated conditions related to the anatomic and physiological changes in the gastrointestinal system such as normal/slow transit constipation, intestinal problems such as dyssynergic defecation, and anorectal functional changes are among the primary causes. Secondary causes include gastrointestinal disorders (tumors, biliary tract disorders, rectal prolapse, anal fissure, irritable bowel syndrome, etc.), metabolic and endocrine disorders (hyper and hypokalemia, diabetes, hyperparathyroidism, etc.), neurological disorders (Parkinson disease, stroke, dementia, etc.), congestive heart failure, and psychological disorders. Moreover, some medications (opioids, anti-inflammatory drugs, anticholinergics, etc.), dehydration, low-fiber diet, inactive lifestyle, gender, age, stress, and delaying defecation are among the secondary causes.[2,3,6,7]

Constipation adversely affects the health status of the elderly and may cause fecal impaction, fecal incontinence, hemorrhoid, anal fissure, and rectal prolapse. Extreme straining may cause fainting, cardiac ischemia, and even mortality by affecting cerebral and coronary circulation.[8,9] In addition to discomfort, the symptoms cause a decrease in the quality of life and an increase in the health care cost.[2]

It is of great importance in planning nursing care interventions to diagnose through easy-to-apply and valid tools to diagnose constipation and to prevent severe problems related to constipation. In this respect, the study aims to determine the prevalence of constipation in elderly people receiving institutional care and the associated factors.

MATERIALS AND METHODS

Ethical Considerations: Ethics approval was obtained from "Non-Clinical Research Ethical Committee" of Düzce University (Date: 05.08.2019, decision No: 2019/159). Written approval was obtained from the institutions where elderly people are receiving long-term care. The objective of the research was explained to the participants, and written consent from the volunteer participants was obtained before the interviews.

Type of Research: The study is a descriptive and analytical type of research.

Research Questions:

- What is the incidence of constipation in elderly people?
- What are the factors affecting constipation in elderly people?
- Are there any relations between the affecting factors of constipation in elderly people?

The Population and Sample: The study population consists of 189 elderly individuals living at "A", which is a retirement home (65 elderly adults), "B", which is an elderly care and rehabilitation center (87 elderly adults), and "C" which is another retirement home (37 elderly adults), which are all subsidiary of the Ministry of Family, Labor and Social Services. Without any sample selection, only the elderly people over 60 years of age who agreed to participate or whose relatives agreed to give permission were included in the study. Patients with communication difficulties declined cognitive function (Mini-Cog < 3), or patients confined to bed were excluded. Of the 108 elderly individuals in the sample, 56 had severe cognitive impairment, 12 did not want to participate in the research, and 13 elderly individuals were out of the institution during the data collection period, between September and October 2019. Of the study population, 57% were included in the study.

Data Collection Method and Tools: The Individual Characteristics Form was used to collect sociodemographic characteristics, as well as the Mini-Cog test, and International Physical Activity Questionnaire – Short Form were used for data collection. Diagnosis of constipation was made according to the Rome IV criteria. Data were collected by researchers using the face-to-face interview method. The questionnaires were completed in approximately 20–25 minutes.

Individual Characteristics Form: The form was developed by the researchers in line with the research objectives. The form includes sociodemographic information such as age, gender, marital status, education level, dietary habits, bowel habits, and stool characteristics.

Mini-Cog© Test: Mini-Cog test, developed by Borson et al.[10] is a combination of 3-item recall and clock drawing tests. In the item recall test, each word is scored one point, so a patient can get between 0 and 3 points. If the patient can recall all three words, the patient is not diagnosed with dementia. If the patient can recall one or two items, then a clock drawing test is performed. If the clock

is correct, then two points are given for a normal clock face. If it is non-normal, the patient gets zero points, indicating a sign of dementia. The total assessment is five points. A score less than three indicates the possibility of cognitive disorder and that a cognitive screening test is needed, four and five-point show that there is no sign of cognitive disorder. In their study conducted among institutionalized elderly individuals for the psychometric suitability of the test in the Turkish population, Bayram et al.[11] found that the Mini-Cog test has 90% sensitivity and 83% specificity.

Constipation Diagnosis Form: This questionnaire was developed for constipation diagnosis according to Rome IV criteria. The criteria require the presence of two or more of the symptoms listed below, which occurred at least 6 months before diagnosis, and were present during the last 3 months.

Symptoms:

1. Straining for more than 25% of defecation attempts
2. Lumpy or hard stools for at least 25% of defecation attempts
3. The sensation of incomplete defecation for at least 25% of defecation attempts
4. The sensation of anorectal obstruction/blockage for at least 25% of defecation attempts
5. Manual maneuvering to facilitate defecation for at least 25% of defecation attempts (e.g., digital evacuations, applying pressure to the pelvis)
6. Fewer than three spontaneous defecation attempts per week

In addition, loose stool must be rare without laxatives, and criteria for irritable bowel syndrome should not indicate this syndrome.[7]

International Physical Activity Questionnaire – Short Form – IPAQ: This questionnaire was developed by Craig et al.[12] to determine the physical activity level of individuals. Its validity and reliability study on the Turkish population was conducted by Öztürk in 2005.[13] The scale questions how much time an individual spent sitting, walking, and doing moderate and vigorous physical activities in the last week. Its short form was developed for survey studies and consists of seven items. While calculating the total score, Metabolic Equivalent of Task (MET) values are assigned to activities (Vigorous activity=8 METs, moderate activity=4 METs, walking=3.3 METs), and they are multiplied by the period (minutes) and their frequency (per day) to obtain weekly MET-minutes. Physical activity levels of individuals are divided into three categories "inactive", "minimally active", and "HEPA (health-enhancing physical activity) active".

Statistical Analysis: Data were converted into digital format and evaluated using the IBM SPSS 21.0 (IBM Statistical Package for Social Science) software. Constant variables were presented using mean±standard deviation, while categorical variables were given in numbers and percentages. The normal distribution of the data was assessed with the Kolmogorov-Smirnov test. While the relationships between categorical variables were evaluated using Pearson Chi-Square, Yates Chi-Square, Fisher-Freeman-Halton Exact Test, and Fisher's Exact Test, constant variables were assessed using the Mann-Whitney U test, and Student t-test. The Bonferroni Post Hoc test was used to determine the group that causes a difference in the categorical variables. Logistic regression analysis was used in multi-way regression analysis. Values with a probability of $p<0.05$ were considered statistically significant.

RESULTS

The average age of the elderly participants was 74.16±7.51, 74.1% were male, and 50.9% were elementary school graduates. Of the participants, 46.3% were receiving institutional care for 2-4 years (Table 1).

The percentage of elderly people with 3 or more

Table 1. Socio-demographic characteristics (n=108).

Characteristics		n (%)
Retirement home	A	49 (45.4)
	B	30 (27.8)
	C	29 (26.9)
Age (Mean±Standard Deviation)		74.16±7.51
Gender	Female	28 (25.9)
	Male	80 (74.1)
Level of education	Literate	28 (25.9)
	Elementary	55 (50.9)
	Secondary and Higher	25 (23.1)
Duration of institutional care	0-1 years	24 (22.2)
	2-4 years	50 (46.3)
	5 years or more	34 (31.5)

chronic diseases was 57.4%. The three most common diseases include hypertension (60.2%), musculoskeletal system disorders (42.6%), and cardiovascular diseases (39.8%). The ratio of elderly adults who can move independently was 67.6%. Yet, 49.1% were inactive with a weekly MET score of 830.69±693.00. More than half of the sample (54.6%) were found to eat fruits and vegetables daily. The average water consumption of the elderly was 7.66±3.57 glasses. However, 4.6% of the sample had the habit of delaying defecation (Table 2). Since 46.3% of the participants had constipation

Table 2. Characteristics related to health and habits (n=108).

Characteristics		n (%)
Chronic diseases	None	4 (3.7)
	1-2	42 (38.9)
	3 and more	62 (57.4)
Diseases*	Cardiovascular Diseases	43 (39.8)
	Hypertension	65 (60.2)
	Type II Diabetes	27 (25.0)
	GIS-Liver Diseases	9 (8.3)
	Urinary System Diseases	32 (29.6)
	Respiratory System Diseases	23 (21.3)
	Neurological Disorders	22 (20.4)
	Thyroid Diseases	10 (9.3)
	Musculoskeletal Disorders	46 (42.6)
	Psychiatric Disorders	31 (28.7)
Mobility	Independent	73 (67.6)
	Wheelchair	9 (8.3)
	Walking stick/walker	26 (24.1)
Level of activity	Inactive	53 (49.1)
	Minimally active	50 (46.3)
	HEPA active	5 (4.6)
Level of activity MET minutes/week (Mean±Standard Deviation)		830.69±693.00
Frequency of fruit and vegetable consumption	Each meal	59 (54.6)
	3-4 meals a week	42 (38.9)
	Fewer than 3 meals a week	7 (6.5)
Water consumption glass/day (Mean±Standard Deviation)		7.66±3.57
Bowel habits	I delay it	5 (4.6)
	I do it when I get the urge	103 (95.4)

*: More than one option marked.

according to Rome IV criteria, 72% were using laxatives. Among the elderly individuals with constipation problems, 86% had straining problems during defecation, 86% had hard stools, 72% had a sense of incomplete evacuation, and 68% had to manually facilitate defecation. The weekly defecation average of the elderly individuals, who met constipation criteria, was 4.18±2.35 (Table 3).

Table 3. Characteristics related to constipation (n=108).

Characteristics		n (%)
Constipation	None	58 (53.7)
	Diagnosed	50 (46.3)
Use of laxatives*	No	14 (28.0)
	Yes	36 (72.0)
Straining during defecation*	No	7 (14.0)
	Yes	43 (86.0)
Sensation of incomplete evacuation during defecation*	No	14 (28.0)
	Yes	36 (72.0)
Hard stool*	No	7 (14.0)
	Yes	43 (86.0)
Sensation of obstruction in anorectal area*	No	16 (32.0)
	Yes	34 (68.0)
Manually maneuver to facilitate defecation*	No	19 (38.0)
	Yes	31 (62.0)
Frequency of defecation (Mean±Standard Deviation)		4.18±2.35

*: People with constipation diagnosis (n=50).

Results on the comparison of constipation with some variables are presented in Table 4. The prevalence of constipation was statistically significantly higher in elderly people who receive institutional care for one year or less, inactive patients, and people with the habit of delaying defecation ($p<0.05$). In addition, the average water consumption of the participants with constipation problems was significantly lower than those without constipation complaints ($p<0.05$) (Table 4).

Table 4. Comparison of the prevalence of constipation with some variables.

Characteristics		Constipation None	Constipation Diagnosed	Test Statistics
		n (%)	n (%)	
Age, year		73.43±6.74**	75.00±8.30**	-1.084 ¥ p=0.281
Gender	Female	9 (32.1)	19 (67.9)	5.945 β
	Male	49 (61.3)	31 (38.8)	p=0.015
Level of education	Literate	10 (35.7)	18 (64.3)	5.154 *
	Elementary	32 (58.2)	23 (41.8)	p=0.076
	Secondary or higher	16 (64.0)	9 (36.0)	
Duration of institutional care	0-1 year (a)	8 (33.3)	16 (66.7) (b)	8.720 *
	2-4 years (b)	34 (68.0)	16 (32.0)	p=0.013
	5 years and over (c)	16 (47.1)	18 (52.9)	
Chronic diseases	None	2 (50.0)	2 (50.0)	1.863 º
	1-2	26 (61.9)	16 (38.1)	p=0.417
	3 or more	30 (48.4)	32 (51.6)	
Level of activity	Inactive	22 (41.5)	31 (58.5)	8.864 º
	Minimally active	31 (62.0)	19 (38.0)	p=0.008
	HEPA active	5 (100.0)	0 (0.0) (a)	
Level of activity MET minutes/week		1019.59±1008.76**	611.58±569.95**	-2.006£ p=0.045
Frequency of fruit and vegetable consumption	Each meal	35 (59.3)	24 (40.7)	1.993 º
	3-4 meals a week	19 (45.2)	23 (54.8)	p=0.376
	Fewer than 3 meals a week	4 (57.1)	3 (42.9)	
Bowel habits	I delay it.	0 (0.0)	5 (100.0)	6.082 ∞
	I do it when I get the urge.	58 (56.3)	45 (43.7)	p=0.019
Water consumption glass/day		8.64±3.94**	6.52±2.71**	-2.412 £ p=0.016

*: Pearson Chi-Square; ¥: Student t test; β: Yates Chi-Square; £: Mann Whitney U; º: Fisher–Freeman–Halton Exact Test; ∞: Fisher's Exact Test; **: Mean±Standard Deviation.

According to the model created as a result of the logistic regression analysis performed for determining distinctive variables that cause constipation in elderly individuals, the total variance explained was 31%. This statistically significant explanatory variable was found to be water consumption (OR=0.851, 95% Cl=0.733-0.987) (Table 5).

Table 5. Logistic regression analysis of significant variables related to constipation.

Variables		β	Standard error	p	OR	95% Cl	
Gender	Female	Reference					
	Male	0.710	0.521	0.172	2.035	0.733	5.644
Duration of institutional care	0-1 year	Reference					
	2-4 years	0.240	0.601	0.689	1.272	0.392	4.129
	5 years or more	-0.984	0.507	0.052	0.374	0.138	1.011
Level of activity MET		0.000	0.000	0.189	1.000	0.999	1.000
Bowel habits	I delay it.	Reference					
	I do it when I get the urge.	1.440	1.169	0.218	4.219	0.427	41.736
Water consumption		-0.162	0.076	0.033	0.851	0.733	0.987

β: Regression coefficient; OR: odds ratio; Cl: Confidence Interval.

DISCUSSION AND CONCLUSION

According to the study results, one of every two elderly people (46.3%) had a constipation problem as diagnosed by the Rome IV criteria. When we look at the rate of constipation among the elderly population in social studies around the world, this rate is in the range of 18-22% in Asian countries,[14,15] 20-33% in the United States, and 9-21% in European countries.[15] However, the prevalence of constipation among elderly people who receive institutional care is higher, similar to the results of this study. The rate of constipation among the elderly who receive institutional care in Türkiye is in the range of 45-52%.[5,8] Yet, studies from different countries report a rate ranging from 23% to 80%.[16-19]

The most common symptoms experienced by these

elderly individuals include straining, hard stool, the sensation of incomplete evacuation, the sensation of anorectal obstruction, and manual maneuvers to facilitate defecation. Likewise, descriptive studies report that the most common symptoms that elderly people with constipation suffer from are straining during defecation and hard stools.[4,20]

Studies focusing on the prevalence of constipation stated that women had a higher rate of constipation issues than men.[6,14,15] This prevailing rate among females is explained by hormonal factors, the anatomic structure of the pelvic floor, innervational damage in pelvic floor muscles due to childbirth or gynecological surgery, or genital prolapses.[14] In this study, the number of women with constipation (68%) was twice the number of men (39%) with constipation, similar to the literature. Considering the relationship between the duration of institutional care and constipation, the prevalence of constipation was higher among patients who have received institutional care for less than a year. In a study conducted in Türkiye, constipation was found to be more common among people who receive institutional care for more than 11 years.[8] In studies in Taiwan and Norway, however, no statistically significant relationship was found between constipation and the duration of institutional care.[16,19]

Repressing the defecation reflex and the habit of delaying defecation may cause the rectum to enlarge by adapting to the feces. This increases the risks of fecal incontinence and impaction. In retrospective studies, chronic constipation is known to increase the occurrence of fecal incontinence 1.7 times,[21] and the risk of fecal impaction 5 to 6 times.[22] In this study, each of the elderly individuals with the habit of delaying defecation was found to suffer from constipation problems. Studies similar to the present research report that 18% of the elderly with constipation delay defecation,[20] and more than half of the elderly people lacked a regular bowel program.[23]

In the study, physically inactive people were found to suffer constipation more than physically active people. In studies conducted on elderly and middle-aged groups in the literature, it was stated that people with a higher level of dependency in their daily activities,[5] people with inactive lifestyles,[24] people without regular physical activity,[8] physically limited people, people who cannot walk without aid,[25] and people who take comparatively fewer number of steps daily[26] experience more constipation problems. While the mechanisms of physical activity affecting constipation cannot be fully explained, it is stated that higher mechanical stimulation in the intestines during exercise, lowered blood flow, and more complex compression of abdominal muscles on the intestines decrease the severity of constipation.[24,27]

We determined that the daily water consumption of elderly people with constipation problems is low and that the daily amount of water consumption has a significant explanatory value in this regard. Similar to this result, it is shown in the literature that there is a negative relationship between fluid consumption and constipation.[8,26] Although the daily fluid need of each person is different, a daily fluid intake below 1.5 liters leads to constipation as a result of the absorption of liquid from the feces, leading to hard stools and constipation.[28]

In the medical treatment of constipation, using laxatives is the first option. Among the elderly people who receive institutional care in different countries, the rate of laxative usage ranges from 59% to 68%.[5,16,26] Similar to the literature, 72% of elderly individuals with constipation were found to use laxatives. In their study, which evaluates the effectiveness of laxatives, Fosnes et al.[30] reported that while they normalize the frequency of defecation and stool types, they fail to relieve straining, a sense of incomplete evacuation, and manual evacuation symptoms.

Although the study results have an authentic value, they cannot be generalized due to the limitation of being conducted in retirement homes associated with only one institution in one city. Numerous factors play a role in constipation. Yet, this study focuses on the relationship between constipation and the factors related to the lifestyle of elder people receiving institutional care. The sample selection of the participants after evaluating their level of cognitive functions reinforced the reliability of the study results.

In conclusion, the study showed that approximately half of the elderly who received institutional care had constipation problems, and 3/4 of them were using laxatives. Gender, duration of institutional care, physical inactivity, the habit of delaying defecation, and the amount of daily water consumption were found to be effective factors in the prevalence of constipation. Although constipation in old age decreases the quality of life, it's a manageable issue. In treating constipation, the first step is evaluating risk factors for each individual, revealing the causes of constipation, proposing lifestyle changes, and supporting elderly individuals for gaining regular bowel habits. Psychological and social support may facilitate the adherence of elderly individuals to treatment, and help them change their dietary and exercise habits. In addition to appropriate pharmacological treatment for constipation, evidence-based nursing care interventions with non-pharmacological approaches can also be implemented. Moreover, it is also recommended to conduct future studies with more factors and larger samples in this regard.

Ethics Committee Approval: Ethics approval was obtained from "Non-Clinical Research Ethical Committee" of Düzce University (Date: 05.08.2019, de-

cision no: 2019/159). Written approval from the institutions where older adults are receiving long-term care was obtained. Participants have been explained the objective of the research and their written consent was obtained prior to the interview and their participation was on a voluntary basis.

Conflict of Interest: No conflict of interest was declared by the authors.

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