

Original Article

Constipation and Quality of Life in Individuals with Cardiovascular Disease

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Abstract

Aim: This study was conducted to evaluate constipation and quality of life in individuals with cardiovascular disease.

Design: This study was conducted as a cross-sectional and correlational research.

Method: The sample of the study consisted of 247 individuals hospitalized in a heart hospital. Descriptive Characteristics Questionnaire, Bristol Stool Scale, Constipation Severity Scale (CSS) and SF-36 Quality of Life Questionnaire were used to collect the data.

Results: It was determined that 66.4% of the participants had constipation. The participants' mean total CSS score was 30.85 ± 7.84 , the mean physical functioning sub-dimension score was 33.58 ± 27.63 , the mean physical role difficulty score was 11.23 ± 27.38 , the mean emotional role difficulty score was 14.03 ± 33.88 , the mean energy/liveliness/vitality score was 44.17 ± 17.62 , the mean mental health score was 77.52 ± 14.03 , the mean social functionality score was 76.51 ± 30.78 , the mean pain score was 46.78 ± 27.74 and the mean general health score was 64.27 ± 13.83 . The mean scores of physical functioning, emotional role difficulty, mental health, social functioning and general health of individuals with constipation were significantly lower than those of individuals without constipation. In addition, the mean scores of physical functioning, mental health, social functioning and general health were negatively correlated with CSS and positively correlated with pain.

Conclusion: More than half of the participants had constipation and as the severity score of constipation increased, the mean scores of physical functioning, mental health, social functioning and general health decreased. Since constipation in patients with cardiovascular disease creates an extra burden that may affect cardiac health, it is of great importance to prevent constipation and to take necessary interventions to resolve it in a short time.

Keywords: Cardiovascular diseases, constipation, quality of life.

Introduction

Excretory activity is the most basic and intimate activity necessary for the maintenance of vitality. The realisation of excretory activity as a controlled and independent life activity starts early in a healthy child. However, individuals may experience various problems related to excretory activity at any stage of life due to congenital deformities, traffic/sports/occupational accidents, orthopedic, cardiological, neurosurgical or oncological reasons or surgical intervention (Turan & Asti, 2016). In addition, constipation, characterised by symptoms such as difficulty in defecation, decreased bowel movements, hard or lumpy stools, excessive straining, inadequate defecation or a feeling of obstruction, is an important problem related to excretory activity that is frequently seen all over the world (Aziz et al., 2020).

Constipation is not a disease but a subjective symptom that can be seen in different ways from person to person (Diaz et al., 2025). Although constipation is not a life-threatening condition, it is an important health problem because it reduces the quality of life, increases the cost of health care and can be seen frequently with other medical problems (Vriesmanet et al., 2020). The prevalence of constipation varies between 0.7% and 79%, and 15-30% of individuals over the age of 60 have chronic constipation (Mari et al., 2020; Walke & Sakharkar, 2021). In the development of constipation, which has a multifactorial etiology, age, gender, stress, sedentary life, fibre-poor diet, heart diseases, haemorrhoids and some drugs are reported to be the causes (Forootan et al., 2018; Wald, 2016; Werth et al., 2015). It is stated that constipation is more common in female and the elderly (Bassotti et al., 2021; Kang et al., 2021; Yildirim & Akman, 2019). The elderly are especially at risk for constipation due to weak intestinal muscles, decreased peristalsis (Dumic et al., 2019), lack of physical activity, insufficient fluid and fibre consumption, chronic diseases and multiple drug use (Mari et al., 2020; Walke & Sakharkar, 2021). It is reported that electrolyte imbalances, endocrine and metabolic disorders, neurological disorders, psychological comorbidities and some medications trigger

constipation, especially in old age (Turan & Asti, 2015; Yildirim & Akman, 2019).

Aging is the biggest risk factor for cardiovascular diseases (CVD) (Rodgers et al., 2019). According to the Turkish Statistical Institute data for 2023, death from circulatory system diseases ranks first, accounting for 33.4% of all-cause mortality (Turkish Statistical Institute, 2023). It is reported that cardiovascular diseases will continue to be the leading cause of death in the coming years (Chong et al., 2024). Constipation, which is common in elderly individuals, negatively affects the health status of elderly individuals and may cause faecal plug, faecal incontinence, haemorrhoids, anal fissure and rectal prolapse in elderly individuals. In addition, excessive straining may cause fainting, cardiac ischaemia and even mortality by affecting cerebral and coronary circulation (Mugie et al., 2011). Therefore, constipation may affect elderly individuals with cardiovascular disease even more negatively.

Planning and implementing nursing care specific to the patient with a diagnosis of constipation is among the independent roles of the nurse. In addition, nurses aim to maintain normal bowel functions of the individual by working in co-operation with other team members such as physicians, dieticians and psychologists and to restore these functions when problems occur (Lundberg et al., 2020). For this purpose, determining constipation in patients hospitalised in cardiology and providing the necessary care to patients in this direction, meeting patient needs, preventing complications that may occur and improving the quality of life of patients. This study was conducted to determine the frequency of constipation, related factors and its relationship with quality of life in individuals with cardiovascular disease.

Method

Study design: A cross-sectional and correlational research method was used.

Participants and Setting: The study population consisted of inpatients who received inpatient treatment at the Heart and Vascular Hospital of a university between the dates of the study. For the research sample, G*Power 3.1.9.4 programme was used to calculate a confidence interval of 0.05, an

effect size of 0.20 and a power of 90%, and it was determined that the sample size should be 216 people. The study was terminated with the participation of 247 individuals. Individuals who were over 18 years of age, diagnosed with cardiovascular disease, had no communication problems and those who wanted to participate in the study were included. Individuals who were not diagnosed with cardiovascular disease by a physician and those who did not accept to participate in the study were not included.

Data collection: The face-to-face interview method was used to collect data. The data collection phase was carried out with patients who met the inclusion criteria in their rooms in the clinic. Descriptive Characteristics Questionnaire, Bristol Stool Scale, Constipation Severity Scale (CSS) and SF-36 Quality of Life Questionnaire were used.

Descriptive Characteristics Questionnaire: This form consists of two parts and was prepared by the researchers in line with the literature (Lundberg et al., 2020; Bilgic et al., 2016; Birimoglu Okuyan & Bilgili, 2019; Konradsen et al., 2022). In the first part, there were questions about the socio-demographic characteristics of the participants (age, gender, educational status, income status, while in the second part, there were questions about the chronic disease status, medications used and nutritional-excretory status of the individuals).

Bristol Stool Scale: Lewis and Heaton developed scale in 1997. With this scale, the duration and characteristics of the stay of the faeces in the colon are evaluated and the change of the stool is followed up with the interventions. On the scale, stools are graded with seven scores ranging from slow intestinal transit (Type 1) to liquid stools (Type 7) (Lewis & Heaton, 1997). In the scale, Types 1 and 2 are considered constipation, Types 6 and 7 diarrhoea (Longstreth et al., 2006). There is no validity and reliability study for the Bristol Stool Consistency Scale, but it is frequently used in Turkey in the evaluation of constipation and related studies.

Constipation Severity Scale (CSS): Varma et al. developed scale in 2008 (Varma et al., 2008). This scale aims to determine the frequency and intensity of defecation and the difficulty/difficulty experienced during defecation. Kaya et al. determined the Turkish

validity and reliability of the scale. The scale has been shown to diagnosing constipation, determining its severity and identifying symptoms of constipation (Kaya & Turan, 2011). The CSS consists of 16 items and three sub-dimensions, namely Obstructive Defecation, Colonic Inertia and Pain. The minimum total score to be obtained from the scale is '0' and the maximum score is '73'. The score that can be obtained from the Obstructive Defecation sub-dimension is between 0-28, the score that can be obtained from the Colonic Inertia sub-dimension is between 0-29, and the score that can be obtained from the Pain sub-dimension is between 0-16. High scores obtained from the scale indicate that the symptoms are serious. In the study conducted by Varma et al. the Cronbach's alpha value was found between 0.88-0.91 (Varma et al., 2008). The Cronbach alpha value of the scale was found to be 0.843.

SF-36 Quality of Life Questionnaire: This scale was developed by Ware. It is used in analyzing the health status and quality of life of individuals (Ware et al., 1994). This scale, which includes thirty-six statements, is in the form of a multi-item scale assessing 2 main topics (physical and mental dimensions) and 8 health concepts (physical functioning, physical role difficulty, emotional role difficulty, mental health, vitality/energy, social functioning, pain and general health perception). The score of each sub-dimension and two main dimensions in the scale varies between 0 and 100. The higher the score obtained from the scale, the higher the health-related quality of life. The adaptation of SF-36 into Turkish was performed by Pinar in 1995 and the internal consistency coefficient was found to be 0.92. In the adaptation study of the scale conducted by Pinar, Cronbach's alpha coefficient was found to vary between 0.81 and 0.92 for each sub-dimension (Pinar, 1996). In this study, Cronbach's alpha value was found to be 0.911, 0.894, 0.972, 0.693, 0.658, 0.890, 0.926, 0.640 for the physical functioning, physical role difficulty, emotional role difficulty, vitality/energy, mental health, social functioning, pain and general health sub-dimensions, respectively.

Data analysis: Statistical analyses were performed using IBM SPSS Statistics 25.0 (IBM Corp, Armonk, NY, USA). There was no missing data for any variable in this study. Descriptive characteristics of the participants

were presented as frequency (n), percentage (%) and mean $\pm$ standard deviation (mean $\pm$ SD) values. Shapiro Wilk test and Q-Q plots were used for normality test. Independent Sample t Test was used for Quality of life scores according to constipation status and the correlation between CSS and quality of life sub-dimensions was analysed by Pearson correlation coefficient. In all analyses, $p < .05$ was accepted significant.

Ethical Considerations: Before starting the research, ethical approval was obtained from the University Clinical Research from the Erciyes University Clinical Research Ethics Committee (Date: 07.04.2021, Number: 276) and institutional permission was obtained from the institution where the research was conducted. At the beginning, All the participants were informed about the study, the purpose of the study was explained, information was given and written informed consent was obtained to ensure voluntary participation. The study adhered to the Helsinki Principles.

Results

The mean age of the participants was 64.62 ± 12.29 years, 51.4% were male, 58.3% were primary school graduates, 50.6% had income less than expenses, 74.1% were married and 93.5% were not working. 41.3% had a BMI of 30 and above (Table 1). The majority of the participants were diagnosed with valvular insufficiency. The mean year of diagnosis was 11.03 ± 10.03 , 38.9% of the participants had a diagnosis between 1-5 years, 93.5% had additional chronic diseases, 78.9% did not have a regular exercise programme, 54.3% did not have a regular diet programme, 61.1% had a change in body weight in the last 6 months and 70.2% of those who experienced a change in body weight experienced weight loss (Table 2).

The mean daily fluid consumption of the participants was 8.58 ± 4.99 glasses, 42.9% of them consumed between 5-8 glasses of fluid,

50.6% of them ate 3 meals a day, and the majority of them ate vegetables, meat dishes, legumes, cereals and fruits. When the excretory characteristics of the participants were examined, it was determined that 70.9% of them used alafranga toilet, 66.4% had constipation problem, 41.7% strained for less than 1 minute, and the majority of the participants who had constipation problem used non-pharmacological method in constipation management. The majority (46.0%) of those who used non-pharmacological methods in the management of constipation used apricot products (Table 3).

According to the Bristol Stool Scale, 24.7% of the participants stated that they had constipation problems during their current hospital stay. The participants' total CSS score mean was 30.85 ± 7.84 , the Obstructive Defecation score mean was 17.54 ± 3.91 , the Colonic Inertia score mean from the sub-dimensions was 10.30 ± 3.24 and the Pain score mean was 1.22 ± 2.14 . When the SF-36 scores of the participants were examined, it was determined that the mean physical functioning score was 33.58 ± 27.63 , the mean physical role difficulty score was 11.23 ± 27.38 , the mean emotional role difficulty score was 14.03 ± 33.88 , the mean vitality/energy score was 44.17 ± 17.62 , the mean mental health score was 77.52 ± 14.03 , the mean social functioning score was 76.51 ± 30.78 , the mean pain score was 46.78 ± 27.74 and the mean general health score was 64.27 ± 13.83 (Table 4).

It was determined that the mean physical functioning, emotional role difficulty, mental health, social functioning and general health scores of individuals with constipation were significantly lower than those of individuals without constipation. In addition, it was determined that the mean physical functioning, mental health, social functioning and general health scores were negatively correlated with the CSS and positively correlated with pain (Table 5).

Table 1 Demographic characteristics of the participants

Characteristics	<i>n=247</i>
Age (Mean ± SD)	64.62±12.29
Gender	
Female	120(48.6)
Male	127(51.4)
Education level	
Literate	44(17.8)
Primary school	144(58.3)
Secondary school	36(14.6)
High School/University/ Postgraduate School	23(9.3)
Income status	
Income is more than expense	20(8.1)
Income is equal to expense	102(41.3)
Income is less than expense	125(50.6)
Marital status	
Married	183(74.1)
Single	64(25.9)
Working status	
Working	16(6.5)
Not Working	231(93.5)
BMI	
Normal (18.5-24.9)	62(25.1)
Overweight (25-29.9)	83(33.6)
Obese (30 and above)	102(41.3)

Table 2. Health status characteristics of the participants

Characteristics	<i>n=247</i>
Diagnosis*	
Coronary angiography	9(3.6)
Valve insufficiencies	111(44.9)
Chronic ischemic heart disease	87(35.2)
Arrhythmia	18(7.3)

Pacemaker/control/revision/infection	15(6.1)
Atherosclerotic cardiovascular diseases	9(3.6)
Enlarged heart	12(4.9)
Other**	14(5.7)
Diagnosis year (Mean±SD)	11.03±10.03
1-5 year	96(38.9)
6-10 year	60(24.3)
11-15 year	28(11.3)
16-20 year	27(10.9)
21 year and above	36(14.6)
Presence of additional chronic diseases	
Yes	231(93.5)
No	16(6.5)
Regular exercise programme	
Yes	52(21.1)
No	195(78.9)
Regular diet programme	
Yes	113(45.7)
No	134(54.3)
Weight change in last 6 months	
Yes	151(61.1)
No	96(38.9)
Body weight change	
Weight increase	45(29.8)
Weight loss	106(70.2)

*More than one answer was given. **Heart murmur, pulmonary/essential hypertension, overload, atrioventricular block, WQW syndrome, endocarditis

Table 3. Dietary and excretory characteristics of the participants

Characteristics	<i>n=247</i>
Daily amount of liquid consumed (glasses) (Mean±SD)	8.58±4.99
1-4 glasses	40(16.2)
5-8 glasses	106(42.9)
9-12 glasses	63(25.5)
13-16 glasses	22(8.9)

17 glasses and more	16(6.5)
Number of daily meals	
2 meals	82(33.2)
3 meals	125(50.6)
4 meals	24(9.7)
5 meals	14(5.7)
6 meals	2(0.8)
Type of food consumed by the majority*	
Vegetable type	221(89.5)
Carbohydrate type	128(51.8)
Meat meals	181(73.3)
Dried Legume	216(87.4)
Grains	198(80.2)
Fruit	221(89.5)
Type of toilet used	
Western-style toilet	175(70.9)
Squat toilet	59(23.9)
Both of them	13(5.2)
Presence of constipation	
Yes	164(66.4)
No	83(33.6)
How long it takes to push while defecating	
Less than 1 minute	103(41.7)
1-5 minute	68(27.5)
6-10 minute	45(18.2)
11-20 minute	25(10.1)
More than 20 minutes	6(2.4)
Using any method for the management of constipation	
Yes	161(65.2)
No	86(34.8)
Methods used in constipation	
Pharmacological method	26(16.1)
Non-pharmacological methods	104(64.6)

Pharmacological and non-pharmacological methods	31(19.3)
Nonpharmacological methods used in constipation*	
Apricot products	74 (46.0)
Fruit	22(13.7)
Plenty of water	22(13.7)
Olive Oil	19(11.8)
Plum products	15(9.3)
Milk, yoghurt	7(4.3)
Chilli pepper	7(4.3)
Greenery	8(5.0)
Other**	30(18.6)

*More than one answer was given. **Vegetables, fibre foods, watery meals, sitting and waiting on the toilet, manual faecal plug cleaning, alternative (senna, black cumin oil, cantoran oil), dried nuts, apple cider vinegar, plain soda, bone broth, chia seeds

Table 4. Constipation and quality of life scores of participants

Scale	n(%)	
Bristol Stool Scale		
Type 1	42(17.0)	
Type 2	19(7.7)	
Type 3	37(15.0)	
Type 4	77(31.2)	
Type 5	62(25.1)	
Type 6	8(3.2)	
Type 7	2(0.8)	
	Mean±SD	Min-Max
Constipation Severity Scale (CSS)		
Obstructive Defecation (OD) (0-28)	17.54±3.91	6-27
Colonic Inertia (CI) (0-29)	10.30±3.24	2-17
Pain (0-16)	1.22±2.14	0-11
CSS total	30.85±7.84	11-44
SF-36		
Physical functioning	33.58±27.63	0-100
Physical role difficulty	11.23±27.38	0-100

Emotional role difficulty	14.03±33.88	0-100
Vitality/energy	44.17±17.62	0-95
Mental health	77.52±14.03	28-100
Social functioning	76.51±30.78	0-100
Pain	46.78±27.74	0-100
General health	64.27±13.83	5-100

Table 5. Quality of life scores according to constipation status and correlation between CSS and quality of life sub-dimensions

	Correlation				
	Constipation	Non-constipation	<i>p</i> *	CSS	
	Mean±SD	Mean±SD		r	<i>p</i> *
Physical functioning	28.99±26.30	42.65±28.10	.000	-.293	.027
Physical role difficulty	9.29±25.70	15.06±30.22	.119	.190	.158
Emotional role difficulty	10.56±29.48	20.88±40.56	.024	-.225	.092
Vitality/energy	42.74±19.00	46.98±14.22	.074	-.244	.067
Mental health	75.95±15.82	80.62±8.88	.013	-.522	.000
Social functioning	72.86±31.41	83.73±28.33	.009	-.311	.019
Pain	45.48±27.33	49.33±28.55	.304	.372	.004
General health	61.58±14.79	69.57±9.82	.000	-.374	.004

*Independent Samples t Test **Pearson correlation

Discussion

Constipation, which is frequently encountered today, is an important health problem affecting the digestive system. Constipation is reported to be associated with the formation of cardiovascular problems. It is stated that the relationship between constipation and cardiovascular problems arises due to changes in the intestinal microbiota. Recently, intestinal microbiota has been recognised as a new risk factor for cardiovascular problems. Changes in intestinal microbiota are also associated with increased blood pressure and cardiovascular disease. In addition, aging is one of the

important risk factors for both constipation and cardiovascular disease (Ishiyama et al., 2019). In addition to physiological changes in the intestines, this is due to many reasons such as decreased physical activity, senile asthenia syndrome and polypharmacy (Ivashkin et al., 2021). In this study, which we conducted to determine the frequency of constipation, related factors and its effect on quality of life in individuals with cardiovascular disease, it was found that the mean age of the participants was 64.62±12.29 and 66.4% of the participants had constipation problems and 24.7% of them had constipation problems during their current

hospitalisation. In a study conducted by Ishiyama et al. it was reported that the incidence of constipation in patients hospitalised for cardiovascular disease was approximately 50%. In one study on older people staying in a nursing home, it was found that more than half of the elderly had constipation problems (Bilgic et al., 2016). In another cross-sectional study conducted by Konradsen et al. (2022) on hospitalised older people, it was reported that 65% of the participants had constipation and one of the most common diseases of the participants was cardiovascular disease (Konradsen et al., 2022). In this study, it was determined that the mean total score of the participants was 30.85 ± 7.84 , the mean Obstructive Defecation score was 17.54 ± 3.91 , the mean Colonic Inertia score was 10.30 ± 3.24 and the mean pain score was 1.22 ± 2.14 . Bilgic et al. (2016) found that the constipation severity level was 37.82 in their study on older individuals (Bilgic et al., 2016). Although the results of the present study are similar to the literature, it is seen that constipation, which poses a great risk for individuals with cardiovascular disease, continues to be a problem.

Chronic constipation is a complex condition characterised by difficult defecation. In this context, it has been stated that this condition has a close relationship with patients' quality of life (Mari et al., 2020; Forootan et al., 2018). Arco et al. (2021) found that 20.68% of the participants had functional constipation and had low quality of life in their study on the elderly (Arco et al., 2022). We found that the mean scores of physical functioning, emotional role difficulty, mental health, social functioning and general health of individuals with constipation were significantly lower than individuals without constipation. In the study of Adiguzel and Demirbag (2020), it was found that there was a decrease in the quality of life of older people with chronic constipation and that constipation-related problems had negative effects on dimensions of quality of life such as pain, physical functions, emotional state, mental state and energy (Adiguzel & Demirbag, 2020). In addition, in this study, it was found that the mean scores of physical functioning, mental health, social functioning and general health were negatively correlated with CSS and positively correlated with pain.

In the study of Adiguzel and Demirbag (2020), a significant negative correlation was found between the mean scores of physical functioning, physical role difficulty, emotional role difficulty and pain sub-dimensions and the mean scores of Chronic Constipation Patient Assessment and Quality of Life Scale (Adiguzel & Demirbag, 2020). In addition, although it is thought that cardiovascular diseases directly or indirectly predispose to constipation, it is stated in studies that the opposite situation is also in question, that is, constipation may pose a risk for cardiovascular diseases (Ishiyama et al., 2019; Ivashkin et al., 2021; Zheng et al., 2024; Judkins et al., 2023; Kubota et al., 2016). In this context, it is thought that observational and long follow-up studies can be effective in analysing this vicious circle.

Constipation is often associated with diet, physical inactivity, concurrent illness or polypharmacy and is common in older people. Despite its potential to lead to serious complications, constipation is often overlooked. The management of constipation is a critical part of the care of older patients with chronic conditions. Risk assessment and appropriate nursing interventions and/or medications should mean that constipation can be minimised, additional medication burden avoided and the risk of non-compliance reduced. The relationship between quality of life and constipation has been evaluated in numerous studies and it has been shown that patients with constipation often have an impaired quality of life compared to the general population. Strategies to prevent and minimise constipation have the potential to significantly improve quality of life for older people (Norton, 2006). It is important to have the correct toilet habits in the management of constipation. It is of great importance to raise awareness of individuals about correct toilet routines such as responding to the need to defecate, not delaying defecation and avoiding prolonged straining (Mari et al., 2020).

Limitations: The fact that this study was conducted with participants who applied to a single hospital in a single country is a limitation of this study.

Implications for Practice: Identifying constipation and its associated factors in individuals with CVD is of great clinical importance. Constipation causes physiological stress, along with straining during defecation. This can place additional strain on the cardiovascular system, leading to serious complications and even cardiac events. Constipation reduces individuals' quality of life. Identifying the underlying risk factors for constipation facilitates symptom management and provides a more holistic assessment of patients' overall clinical condition. Therefore, systematic follow-up of constipation and taking necessary measures provide a comprehensive approach to cardiovascular disease management.

Conclusion: More than half of the participants had constipation problems and as the constipation severity level increased, the mean scores of physical functioning, mental health, social functioning and general health of the participants decreased. Since constipation in patients with cardiovascular disease creates an extra burden that may affect cardiac health, it is of great importance to prevent constipation and to take necessary interventions to resolve it in a short time.

Declaration of Data Availability: Data supporting the findings of this study are available from the corresponding author upon request.

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