Original Article

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_345_23

A survey on functional constipation and its risk factors in older people in Shahreza, Iran

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Abstract:

BACKGROUND: Functional constipation is prevalent among older people. It has major effects on the quality of life of them, as well as the high costs of treatment. This study investigated functional constipation and risk factors affecting older people living in Shahreza, Iran.

MATERIALS AND METHODS: This cross-sectional study was performed on 200 older people in Shahreza. They were selected by simple random sampling. We used the Rome III Criteria, the Elderly Physical Activity Questionnaire (PASE), and related questions from the SIB system (integrated health system). After completing the questionnaires, the data were analyzed using the mean and standard deviation, Chi-square test, independent-samples *t*-test, Fisher's exact test, and Mann–Whitney test.

RESULTS: The prevalence of functional constipation was 45%. There are significant relationships between functional constipation with dental problems (P = 0.02), intake of fluid (P = 0.001), fruits (P = 0.001), and vegetables (P < 0.001), polypharmacy (P = 0.003), and antidepressants (P = 0.008), history of colon (P = 0.003) and anal (P = 0.001) diseases, stroke or mobility disabilities (P = 0.002), the level of physical activity (P = 0.002), and gender (P = 0.04) in older people living in Shahreza.

CONCLUSIONS: According to the high prevalence of functional constipation in the studied older people, it is necessary to focus on controlling risk factors and planning to prevent the destructive effects of social restrictions on older people during the coronavirus disease 2019 (COVID-19) pandemic.

Keywords:

Chronic constipation, functional constipation, older people, risk factors

Introduction

Chronic constipation (CC) is a common gastrointestinal condition.[1] It affects all people, especially older adult.[2] Constipation is an annoying condition.[3] It is characterized by difficult stool passage.[4] The most common type is functional constipation, which is characterized by the exclusion of other secondary causes.[5] Constipation can interfere with social functioning and activities of daily living in older people.[6] The prevalence of CC in older people increases with age.[7] In community-dwelling older people of 65 years, the prevalence is 26% for women and 16% for men, and in older people of 84 years, the prevalence is 34% and 26%, respectively,[2] or an overall prevalence of about 50%.[8] Its overall prevalence is estimated at about 1–80% worldwide because of variety of its definition. The prevalence of constipation and functional constipation in Iran has been reported to be 33.4% and 15.2%, respectively, and it was more prevalent among women.[9,10] The prevalence of CC among community-dwelling older people in Iran reaches 50%.[11]

Functional constipation has a major impact on quality of life, healthcare costs, and resources.[4,12] Functional constipation is a significant risk factor compared with other

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Received: 11-03-2023
Accepted: 28-05-2023
Published: 28-03-2024

How to cite this article: Amiri M, Hassanzadeh A, Rahimi M. A survey on functional constipation and its risk factors in older people in Shahreza, Iran. J Edu Health Promot 2024;13:118.

risk factors for survival and should be given special attention.[13] Functional constipation is a problem for older people's health due to population growth.[14] Assessing the risk factors for functional constipation can help prevent it. Some conditions, such as physiological changes in the gut with aging, limitation in drinking and caloric intake, mobility reduction, polypharmacy, low fiber diet, socioeconomic conditions, diabetes mellitus, hypothyroidism, overweight and excessive consumption of laxatives, sleep, and stress, are the main reasons for CC.[4,8,14-16]

Since most older people do not seek counseling to determine the cause of constipation and consider it a natural issue or use home remedies and over-the-counter medications to treat it,[13] it is necessary to investigate the prevalence and related risk factors. Lifestyle changes are usually suggested as the first recommendation by health professionals to prevent constipation.[16] Physical activity to any extent can improve the health status of older people and is effective in improving digestive function and constipation.[17] Consumption of fluids of about 2 liters in the intervals between meals alternately during the day is also effective in reducing constipation.[18] Due to the existing limitations in older people, such as irreversible physiological changes and the annoying effect of functional constipation on their quality of life, and the social limitations, and lifestyle changes in the coronavirus disease 2019 (COVID-19) pandemic, this study was performed to evaluate the risk factors affecting functional constipation among community-dwelling older people in Shahreza, Iran.

Materials and Methods

Study design and setting

The cross-sectional study was conducted on over 60 years of community-dwelling older people in Shahreza, Iran, in 2021.

Study participants and sampling

The sample size was 200 older people. The sample size was calculated from the formula n = ⟦P(1-P)Z⟧ ^2/ d^2, where Z is the confidence coefficient of 95% and is equal to 1.96, P is an estimate of the prevalence of constipation in the elderly living in the community, which is up to 50%, and d is the maximum estimation error, which is considered to be 0.07. Sampling was done by a simple random method among the older people who have a file in the SIB system (the SIB system was created by the Ministry of Health to register, maintain, and update the health information of Iranian people (and using the random number generator. All older people are covered in three health centers in Shahreza and receive monthly care. We selected older people from three centers equally. Their addresses and telephone numbers are registered in the SIB system. Inclusion criteria include age over 60 years, referring to health service centers in Shahreza City, willingness to participate in the study, ability to communicate by phone, and not using special drugs affecting intestinal movements or laxatives. The only exclusion criterion was the lack of complete response to the questionnaire. Due to the conditions of society in terms of the COVID-19 pandemic, which has caused a sharp decline in the number of older people, it was necessary to use the telephone interview. Questionnaires were completed by the researcher between 9 and 12 after providing informed consent. The average duration of the interviews was 20 minutes.

Data collection tool and technique

The Rome III Criteria, the Physical Activity Scale for the Elderly (PASE), and the SIB system were used. Demographic characteristics were also obtained.

The Rome III Criteria: The third version of the Rome Criteria is designed to classify functional gastrointestinal disorders based on clinical signs. It assesses symptoms for over 6 months and two or more of the following symptoms for more than one-fourth of the defecations during the past 3 months:

a. Straining during more than one-fourth (25%) of defecations, b. lumpy or hard stools according to The Bristol Stool Form Scale (BSFS 12) more than one-fourth (25%) of defecations, c. sensation of incomplete evacuation more than one-fourth (25%) of defecations, d. sensation of anorectal obstruction or blockage of more than one-fourth (25%) of defecations, e. manual maneuvers to facilitate more than one-fourth (25%) of defecations (e.g. digital evacuation and support of the pelvic floor), and f. fewer than three spontaneous bowel movements per week.[19]

PASE. It is one of the most widely used tools for measuring physical activity in older people. We used the Persian version of questionnaire. The validity and reliability of this questionnaire were performed by Borji *et al*.[20] (2017), and Cronbach's alpha coefficient was 0.92. This questionnaire has three sections: leisure, work at home, and work-related activities. The higher the score, the greater the physical activity. A score of 0 to 10 for low, 10 to 20 for moderate, and above 20 for intense physical activity was considered.

SIB System (Integrated Health System(. Integrated health system is a national system for recording the health information of the population living in the Islamic Republic of Iran. We extracted many constipation-related questions from the system (physical activity, diet, fiber and liquid consumption, drug use, oral health, and some

common diseases) based on literature reviews and asked older people.

Data analysis was performed using descriptive statistics including frequency, mean and standard deviation, and analytical statistics such as chi–square test, independent-samples *t*-test, Fisher's exact test, and Mann–Whitney test. The analysis was performed by Statistical Package for the Social Sciences (SPSS) version 22. The significance level in the tests was considered to be 0.05.

Ethical consideration

At the beginning of each interview, the researcher explained the purpose of the study and ethical consideration. The participation of the people was voluntary, and if they did not want to, they were apologized to and the call was cut off, and they were assured of the confidentiality of their information. This study was conducted after permission from the Isfahan University of Medical Sciences and after obtaining an ethics code IR.MUI.RESEARCH.REC.1399.660.

Results

This study was conducted to investigate the prevalence of constipation and its related risk factors in community-dwelling older people in Shahreza, Iran, in 2021. For this purpose, 200 older people were studied, whose age range was from 61 to 88 with an average of 69.3 and a standard deviation of 6.9 years. One hundred and fifteen older people (57.5%) were female, and 85 (42.5%) were male. Most of them (50.5%) were housewives, and the highest frequency of their education level (28.5%) belonged to the illiterate group. The results showed that 90 older people (45%) had functional constipation. In addition, 110 older people (55%) used whole wheat bread. To investigate the relationship between constipation and demographic characteristics (age, sex, occupation, and education) in older people living in Shahreza, an independent-samples *t*-test was performed and the results showed that the mean age of the elderly with non-constipated older people was not significantly different ($P = 0.12$). The Chi-square test also showed that the frequency of constipation in female older people was significantly higher than in male older people ($P = 0.04$), but the frequency of constipation was not significantly different between older people with different occupations ($P = 0.68$). The Mann–Whitney test showed that the frequency of constipation was not significantly related to the level of education ($P = 0.69$).

According to the results, the independent-samples *t*-test showed that the mean score of total physical activity and all its domains in the elderly with constipation was significantly lower than the non-constipated elderly ($P < 0.05$). In other words, there is a significant relationship between constipation and the level of physical activity of the elderly [Table 1].

The results of the Chi-square test showed that the frequency of constipation with the use of strong analgesics ($P = 0.12$), calcium tablets ($P = 0.97$), iron tablets ($P = 0.65$), blood pressure medications ($P = 0.92$), and diuretics ($P = 0.23$) had no significant relationship, but in the elderly who took more than five drugs per day, the frequency of constipation was significantly higher than in other elderly ($P = 0.003$)). In addition, Fisher's exact test showed that the frequency of constipation was significantly higher in the elderly who took antidepressants ($P = 0.008$) [Table 2].

The Mann–Whitney test showed that the frequency of constipation was significantly related to daily fluid intake ($P = 0.001$), fruit intake ($P = 0.001$), and vegetable intake ($P < 0.001$) in the elderly. In other words, by increasing the consumption of liquids, fruits and vegetables, constipation in the older people decreased [Table 3].

The results of the Chi-square test showed that the frequency of constipation in the elderly who had reduced food intake was significantly higher than in older people who did not reduce food intake ($P = 0.01$). In addition, in older people with teeth without problems, the incidence of constipation was significantly lower than in other elderly participants in the study ($P = 0.02$) [Table 4].

The Chi-square test showed that in the elderly with a history of colon disease ($P = 0.003$), anal disease ($P = 0.001$), and stroke or mobility impairment ($P = 0.02$), the incidence of constipation was significantly higher than in other older people. There was no significant relationship between the frequency of constipation with a history of abdominal surgery ($P = 0.50$), anemia ($P = 0.16$), and hypothyroidism ($P = 0.23$) [Table 5].

Table 1: Mean score of total physical activity and its areas by constipation in older people

Fields of physical activity	Non-constipation		Constipation		*P*
	Average	Standard deviation	Average	Standard deviation	
Total score	28.6	12.2	23.5	10.7	0.002
Leisure time	28.5	10.4	24.3	8.9	0.003
Home activity	35.7	12.2	28.7	13.6	0.049
Job activity	7.8	1.8	3.3	1.4	0.02

Discussion

The aim of this study was to investigate the prevalence of constipation and its related risk factors in older people living in Shahreza in 2020. Functional constipation was more common in women than men, which has been reported in numerous studies. The reason may be due to consuming more laxatives, expressing symptoms more than men, the effect of sex hormones, and the later emptying of the stomach in women.[9,10,21,22]

As the results show, the prevalence of functional constipation in the study population was 45%, which indicates its high prevalence. In other studies conducted in Iran, the prevalence of functional constipation has been reported to be 15.2%[9] and 24.2%.[4] This may be due to the COVID-19 pandemic period. Lifestyle change and the social limitations of older people and the impact on their physical activity and diet, as well as the use of more drugs among them, are possible reasons.

Table 2: Frequency distribution of constipation by medication use in older people

Medicine	Number	Percent	*P*
Strong painkillers			
Consumption	12	60	0.12
Do not consume	78	43.3	
Calcium supplement			
Consumption	26	44.8	0.97
Do not consume	64	45.1	
Iron supplement			
Consumption	9	50	0.65
Do not consume	81	44.5	
Blood pressure medication			
Consumption	7	43.8	0.92
Do not consume	83	45.1	
Diuretics			
Consumption	10	58.8	0.23
Do not consume	80	43.7	
Antidepressants			
Consumption	8	88.9	0.008
Do not consume	82	42.9	
Take more than five medications a day			
Consumption	31	63.3	0.003
Do not consume	59	39.1	

The results showed that there is a significant relationship between constipation and the overall score of physical activity and its dimensions in older people living in Shahreza. Many studies have been conducted on the effects of physical activity and constipation. Some studies have not shown an association between physical activity and constipation, especially in older people,[2,6,10,22] while most studies have focused on regular physical activity and its effect on reducing the symptoms of constipation.[3,10,19,21,23] In this study, the reduction in physical activity due to social restrictions related to the COVID-19 pandemic, especially in older people, can be considered one of the important causes.

Older people take a large number of medications due to their concomitant illnesses. This causes many complications, including constipation.[21] The results of the present study showed that there is no significant relationship between constipation and drug use in older people living in Shahreza, except for antidepressants. Antidepressants have anticholinergic effects and aggravate constipation.[24,25] In older people who took more than five drugs a day including over-the-counter drugs,[2] the frequency of constipation was significantly higher than in other older people. Like this study, there is an association between polypharmacy and constipation in some studies[26,27] and no association in other studies.[28] It is better to reduce the number of drugs used by the elderly to use anti-constipation drugs.[21]

Table 3: Frequency distribution of constipation by fluid intake, fruit intake and vegetable intake in older people

Variable	Number	Percentage	*P*
Constipation by fluid intake during the day, fruit intake, vegetable intake, and dairy intake			
The amount of fluid consumption during the day			
<4 glasses	42	58.3	0.001
4–8 glasses	39	41.5	
>8 glasses	9	26.5	
Ratio of fruit consumption			
Rarely or never	18	75	0.001
<2 shares	34	47.2	
2–4 shares	38	36.5	
Ratio of vegetable consumption			
Rarely or never	39	61.9	0.001<
<3 shares	41	44.6	
3–7 shares	10	22.2	

Table 4: Frequency distribution of constipation by reducing food intake due to dental problems and chewing or swallowing disorders and the condition of the teeth of older people

Variable	Number	Percentage	*P*
Decreased food intake due to dental problems and chewing or swallowing disorders			
Reduce food intake	13	72.2	0.01
No reduction in food intake	77	42.3	
Condition of teeth			
Without problem	65	40.9	0.02
With problem	25	61	

Table 5: Frequency distribution of constipation by the history of abdominal surgery and various diseases

Histories	Number	Percentage	*P*
History of abdominal surgery			
Yes	31	48.4	0.50
No	59	43.4	
History of colon diseases			
Yes	22	68.8	0.003
No	68	40.5	
History of anal diseases			
Yes	27	67.5	0.001
No	63	39.4	
History of anemia			
Yes	14	58.3	0.16
No	76	43.2	
History of hypothyroidism			
Yes	19	59.4	0.23
No	71	42.3	
History of stroke or movement disability			
Yes	10	76.9	0.02
No	80	42.8	

Some diseases are concurrent with constipation. Diseases directly and indirectly affect the functional constipation of older people in different ways. Problems such as irritable bowel syndrome (IBS) are associated with constipation in 25% of cases.[29] Anal fissure and constipation occur together.[30] Neurologic conditions, including cerebrovascular disease and general disability, are causes of constipation.[3,7,10,31] Oral health in older people has an important impact on their general health status and nutrition.[32] There is a link between masticatory problems and gastrointestinal disorders such as constipation.[6,33]

Reducing food intake is effective in causing constipation in older people.[3,6] Reducing the amount of food, fluids, fruits, and vegetables consumed on the incidence of constipation in older people was effective in this study. Anorexia due to physiological, pathological, and social changes in older people is one of the causes of constipation.[6] Adequate fluid and fiber intake is effective in preventing and reducing the symptoms of constipation.[2] Oral and dental diseases are also effective in causing constipation.[6] Consumption of fluids and fiber is one of the most important ways to control constipation in older people, which is why fiber consumption is recommended in most clinical guidelines to prevent constipation.[3,21,22]

Limitations and recommendation

The prevalence of the COVID-19 pandemic and social constraints was major problem in accessing older people. Self-reporting was also a serious limitation. According to the results of this study, it is suggested to conduct studies with more samples focusing on the factors affecting constipation such as sex, physical activity, literacy, polypharmacy, fluid intake, and proper nutrition.

Conclusion

Functional constipation is a common problem in older people, characterized by slow bowel movements. Our study showed a high prevalence of functional constipation among older people studied during the COVID-19 pandemic. Risk factors such as female gender, lack of physical activity, polypharmacy and antidepressant drugs, lack of food and fiber and fluid intake, oral and dental problems, diseases of the colon and anus, stroke, and movement disorders were among the causes.

Acknowledgment

The authors thank all the older people who participated in the study.

Financial support and sponsorship

This work was supported by the Isfahan University of Medical Sciences.

Conflicts of interest

There are no conflicts of interest.

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