Original Article

Factors Associated with Gastrointestinal Symptoms Rating in the Elderly: A Cross-Sectional Study

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ABSTRACT

Background:
Aging is one of the stages of human life associated with many challenges and changes. Considering the importance of the gastrointestinal tract on the health of older people, the present study aimed to investigate factors associated with Gastrointestinal Symptoms Rating (GSR) in the elderly in Neyshabur.

Materials and Methods:
This cross-sectional study was performed on 481 older adults referred to comprehensive health services centers in Neyshabur in 2023. Sampling was done using a stratified random sampling method proportional to the size of the floors. Data were collected using demographic questionnaires and the GSR scale. Univariate analysis and multiple linear regression were used in SPSS software version 16 to inspect the relationship between demographic variables and GSR scores.

Results:
The mean±SD of the age of older people was 68.89±7.32 years. Also, the mean±SD of GSR in the elderly was 13.06±14.09, which indicated a low prevalence of GSR in the elderly. Based on the results of regression analysis, there was a statistically significant relationship between the GSR with unemployment (B=-11.294, living with children (B=7.910, P=0.003) and anxiety (B=0.887, P<0.001).

Conclusion:
The findings of this study indicated that the GSR in the elderly was low. Therefore, it is suggested that comprehensive health services centers have programs focused on improving and preventing digestive problems in the elderly.

Keywords: Gastrointestinal diseases, Health, Aged

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INTRODUCTION

With the improvement of the health situation in the world and the subsequent increase in life expectancy, the aged population is increasing, so it is expected that this population increase will accelerate in the coming years. These demographic changes in the elderly have led to more attention from health systems to aging (1,2). According to the definition of the World Health Organization (WHO), a person who has passed the age of 60 is elderly (3). In Iran, by comparing the population pyramid in the past decades, it can be concluded that the elderly population will increase rapidly in the coming decades (4). According to the population statistics reported in 2015, the elderly constituted %9.27 of the total population, and it is expected that the country's population over 60 years old will reach %10.7 by 2021 (9 million elderly) (5). Also, the aging rate of Iran's population is expected to reach 31% of the total population in 2050 (6). This shows the importance of this issue, and according to the severe needs of society, appropriate health and treatment plans should be prepared and implemented for this age group (7). Old age, as the last stage of human development, is a distinct experience and an inevitable process that brings with it physical challenges and changes, such as an increased risk of diseases and physical challenges (8). One of the changes that occurs with age is the change in the functions of the digestive system, which makes the elderly susceptible to disorders such as gastroesophageal reflux, constipation, diarrhea, stomach ulcers, bloating, abdominal pain, indigestion, etc. (9). Gastrointestinal disorders are in the second place of problems in the elderly, which is about 50% of complaints of the total number of visitors to the centers (10). In a study conducted in Iran, the findings showed that gastrointestinal problems were the second most common problems in the elderly after cardiovascular diseases (11). In terms of the type of digestive problems, it can be said that constipation affects 15% of the elderly, also, 20% to 45% of elderly suffer from functional indigestion (bloating, abdominal pain, premature satiety, and indigestion. Diarrhea is also one of the most dangerous digestive diseases of the elderly, which is almost 14% to 17% of people are affected by it (12). In the study conducted on the elderly, a significant relationship was observed between gastrointestinal disorders and the prevalence of mental disorders, which shows the effect of gastrointestinal problems on different aspects of the life of the elderly (13). Also, the findings of Najafi et al. showed that gastrointestinal problems as a component of physical health had a direct relationship with impairment in the health of the elderly (14). It seems that addressing the aspects of the health of the elderly, including the amount of attention and support they receive, is one of the future necessities of the systems that should be addressed from different angles. The sensitivity of psychological issues and the vulnerability of the elderly age group, as well as the change in customs and traditions, the change in the family structure from extensive to nuclear, and the prevalence of technological advancement have required the elderly to bear the burden of their lives completely. In the meantime, due to the importance of nutrition in the elderly and the effect of gastrointestinal problems and disorders on their physical health and the process of their recovery, and considering that most of the hospital beds are occupied by the elderly, the present study was performed to investigate the factors related to the GSR in the elderly in Neyshabur in 2023. It is hoped that by conducting this study, it will be possible to identify the amount of GSR and identify the relevant and common factors to select the best strategies for improving gastrointestinal problems in the elderly.

MATERIALS AND METHODS

The present study was a cross-sectional study that was performed on 481 elderly people referred to comprehensive health services centers in Neyshabur in 2023. Sample size calculation was done using G.Power software 3.1.9.2 considering the error of the first type of error of 0.05, the test power of 0.95, and the small effect size of 0.2 according to Cohen's guide(15). 436 people were determined,which increased to 481 people by considering the 10% drop in samples or questionnaires that were completed incorrectly. Sampling was done using stratified random sampling. In this way, each of the eight comprehensive health services centers in Neyshabur city was considered as one cluster, and according to the population of the elderly covered by each center and the size of the sample, the cases were selected from people going to health centers for a particular service. The method of data collection was that the researchers attended the comprehensive health services centers in Neyshabur and among all the elderly who had referred to the centers to receive health services, taking into account the inclusion criteria of the study (60 years and above, living in Neyshabur, having a health record, the ability to talk, written informed consent to participate in the study, and not having any physical or mental illness disabling), explaining the objectives of the study and emphasizing the confidentiality of the information. It should be noted that the questionnaires were completed through interviews.

Measures

The samples completed a two-part questionnaire that included demographic information and the GSR. The questionnaire included demographic information, including age, sex, education level, employment, life (meaning to live with whom), history of drug use, number of children, wealth index, anxiety status, and amount of physical activity (minutes per week). The Wealth Index is a composite

degree of the cumulative residing preferred of a household. It calculates the usage of facts on a household`s possession of a decided-on set of assets, including televisions, bicycles, and cars; residing traits, including floor material; sort of ingesting water source; and restroom and sanitation facilities. The Wealth Index considers traits that can be associated with wealth status, averting variables that do not constitute an asset or final results variables. In order to calculate the wealth index as a composite scale of the cumulative standard of living of the elderly, data on the ownership of assets of the elderly was collected, and principal component analysis was used. Finally, according to the analyses, people were placed in one of the spectrums (the poorest to the richest) in terms of the amount of wealth (not income) (16). The Gastrointestinal Symptoms Rating Scale (GSRS) is a 15-question questionnaire designed to evaluate gastrointestinal symptoms in 5 subscales of abdominal pain (abdominal pain, hunger pangs, and nausea), reflux (heartburn and gastroesophageal reflux), diarrhea (diarrhea, tenesmus(, constipation (fecal impaction, obstructed defecation) and dyspepsia (borborygmus, flatulence, belching, and aerophagia). It should be noted that the diarrhea subscale includes two questions, the abdominal pain subscale has four questions, the reflux subscale has two questions, the constipation subscale has three questions, and the dyspepsia subscale has four questions. The scoring of this questionnaire is based on a 7-point Likert scale from no discomfort (0) to severe discomfort (7). The total score is obtained from the sum of the mean scores in each subscale, and an increase in the score in this scale indicates the severity of symptoms. The reliability of this questionnaire in Iran was reported by Mazaheri et al., using the internal consistency method of and its reliability was also confirmed 0.80 (17,18).

Statical analysis

Data analysis was performed using SPSS software version 16. To describe the data, descriptive statistics such as mean and standard deviation for quantitative and frequency variables, and percentage for qualitative variables were used. Before performing parametric tests, the normality of data distribution was investigated using the Kolmogorov-Smirnov test. Then, an independent t test was used to compare the mean of the two independent groups. Analysis of variance was used to compare the mean of more than two groups, and multiple linear regression was used to investigate the relationship between the dependent variable and independent variables. The appropriate statistical test was selected based on the type of variables and their measurement level. All analyses were performed at a significant level of 0.05.

Ethical Considerations

This study was examined and confirmed by the Ethics Committee of Neyshabur University of Medical Sciences with the code IR. NUMS.REC.1402.003. After being informed of the purpose of the study and the confidentiality of their data, the participants' written informed consent was obtained, and the questionnaires were completed through interviews.

RESULTS

The mean±SD of the age of the elderly in this study was 68.89±7.32 years. Out of the total 481 participants, 49.3% were male and 50.7% were female. In terms of employment, most of the participants in the study (43.5%) were unemployed. In terms of marital status, 66.5% of the elderly were married. Also, the majority of the participants (74.6)%) had a history of drug use (Table 1).

Table 1. The demographic characteristics of the elderly, n=481

Variables	Category	Mean±SD or N (%)
Age, year		68.89±7.32 am
Sex	Female	244 (50.7%)
	Male	237 (49.3%)
Employment status	Employee	5 (1.0%)
	Retired	134 (27.9%)
	Self-employment	133 (27.7%)
	Unemployment	209 (43.5%)
Marital status	Single	15 (3.1%)
	Married	320 (66.5%)
	Divorced	6 (1.2%)
	Widowed	140 (29.1%)
Education level	Illiterate	236 (49.1%)
	Elementary	149 (31.0%)
	Secondary	26 (5.4%)
	High school	41 (8.5%)
	Academic	29 (6.0%)
History drug use	No	417 (86.7%)
	Yes	64 (13.3%)
Drug using now	No	437 (90.9%)
	Yes	44 (9.1%)
Residence with	Spouse	308 (64.0%)
	Children	63 (13.1%)
	Alone	110 (22.9%)
History of taking medicine	No	122 (25.4%)
	Yes	359 (74.6%)
Number of children		4.75±2.24
Physical activity per week (min)		328.17±418.0
Wealth index	Poorest	96 (20.0%)
	Poorer	96 (20.0%)
	Middle	94 (19.5%)
	Richer	99 (20.6%)
	Richest	96 (20.0%)

SD: Standard deviation

Table 2. The mean±SD of the GSR scores by demographic and socioeconomic variables

Variable	Category	Mean±SD	P value
Age, year	≥ 70	12.94±14.22	0.794a
	> 70	13.30±13.88	
Sex	Female	13.99±13.39	0.142a
	Male	12.11±13.75	
Employment status	Employee	26.20±20.97	0.009b
	Retired	13.61±13.62	
	Self-employment	10.20±13.08	
	Unemployment	14.22±14.55	
Marital status	Single	22.73±18.23	0.007b
	Married	11.97±13.48	
	Divorced	7.0±7.97	
	Widowed	14.77±14.67	
Education level	Illiterate	12.83±13.37	0.797b
	Elementary	13.11±14.94	
	Secondary	11.77±14.48	
	High school	12.90±13.83	
	Academic	16.14±15.85	
History of drug use	No	12.98±14.12	0.099a
	Yes	13.58±14.01	
Drug using now	No	12.82±13.94	0.242a
	Yes	15.43±15.47	
Residence with	Wife	11.33±13.08	<0.001b
	Children	19.13±16.26	
	Alone	14.44±14.50	
History of taking medicine	No	9.48am±12.64pm	0.001a
	Yes	14.28±14.37	
Number of children	≥ 4	12.19±13.70	0.181a
	> 4	13.91±14.44	
Physical activity per week (Minute)	≥150	15.54±15.03	0.001a
	> 150	11.33±13.15	
Wealth index	Poorest	12.86±13.69	0.318b
	Poorer	14.98±14.79	
	Middle	10.65±13.33	
	Richer	13.64±13.90	
	Richest	13.11±14.62	

SD: Standard deviation;
a:P value conducted from independent t-test.
b:P value conducted from one-way-ANOVA test.

The results of Table 2 show that in univariate studies, some demographic and socioeconomic variables are associated with the mean score of gastrointestinal symptom severity. In particular, employment status, marital status, education level, place of residence, history of drug use, physical activity, and wealth index were associated with significant differences in the mean score of gastrointestinal symptom severity. In contrast, age, sex, number of children, and history of current drug use did not show a significant relationship with the score of severity of gastrointestinal symptoms. The findings of the present study showed that the mean±±SDof the severity of gastrointestinal symptoms in the elderly was 14.09±13.06, which indicated that the severity of the symptoms was low in the elderly.
Table 3. Relationship of GSR with Demographic Variables.

Table 3. Relationship of GSR with Demographic Variables.

Model	B	HERSELF	P value
Sex=Female	Ref	-	-
Sex=Male	.182	1.593	.909
Job=Employee	Ref	-	-
job=Retired	-7.867	5.204	.131
job=free	-9.543	5.229	.069
job=Unemployed	-11.294	5.359	.036
Marital status=Single	Ref	-	-
Marital status =married	.057	3.607	.987
Marital status =divorced	-7.151	5.464	.191
Marital status =widow	-2.935	3.152	.352
History of drug use=No	Ref	-	-
History of drug use=Yes	-.032	1.590	.984
place=with wife	Ref	-	-
place=with children	7.910	2.688	.003
place=alone	4.534	2.724	.097
History of taking certain medicine=No	Ref	-	-
History of taking certain medicine=Yes	.410	1.229	.739
Number of children ≤ 4	Ref	-	-
Number of children > 4	.883	1.056	.404
PA ≤ 150 min/per week	Ref	-	-
PA > 150 min/per week	-.948	1.113	.395
Anxiety	.887	.060	<.001

SE: Standard error
Ref: Reference level
B: Unstandardized Coefficients
β: Standardized Coefficients

In order to investigate the relationship between the variables of this study and the GSR score, the variables in Table 2 with a significance of less than 0.2 were entered into a multiple linear regression model. The results (Table 3) show that there is a significant relationship between some demographic variables and GSR scores. Although the difference in GSR scores between men and women (B=0.182, P=0.909) was not significant, not being employed had a significant effect on reducing GSR scores compared with being employed (B=-11.294, P=0.036). So, unemployed people reported lower scores in the GSR than those who were employed. Also, living with children had higher scores in the GSR than living with a spouse (B=7.910, P=0.003). In addition, in evaluating the relationship between anxiety and GSR scores, the findings showed that an increase in anxiety scores was significantly associated with an increase in GSR scores (B=0.887, P<0.001). In contrast, other variables such as marital status, history of drug use, number of children, and weekly physical activity were not significantly related to GSR scores.

DISCUSSION

The aim of this study was to investigate the factors related to the GSR in the elderly in Neyshabur in 2023. One of the important results of the present study was that the mean score of GSR in the elderly was 13.06, which indicated a low prevalence of GSR in the elderly. The findings reported by Patel et al. in 2021(19) showed that gastrointestinal problems would also increase with age. The prevalence of chronic diseases among the elderly and the proliferation of diseases or multiple chronic diseases or having two or more chronic diseases at the same time have been discussed. This will intensify the pressure on the health system's resources and increase the referral to the health system and health and treatment uses. Another important result of the present study was the association of GSR with unemployment. The severity of symptoms was 7 times higher in unemployed people than in employed people. Alizadeh et al. (20) showed that employment status could be related to gastrointestinal function (a physical health dimension). A study by Barkhori et al. in 2021 (21) showed that working elderly had more social health than unemployed elderly. In a study by Asadi et al. in 2021 (22), job status or income was associated with greater general health in the elderly. Contrary to the results of the present study, Mohagheghi et al. in 2022 (23) showed that the prevalence of chronic diseases in housewives and retired elderly was higher than in the unemployed or employed elderly. In old age, due to biological changes, the physical and mental performance of the person decreases, and society expects less activity and active presence from the elderly. These two factors practically provide the ground for reducing participation in social activities and, subsequently, social isolation of the elderly (24). Another result of the present study was that the GSR was related to living with children. In other words, those who lived with their children had a score of 7 times higher than those who lived with their spouses. A study by Saeed et al. in 2019 (25) found that seniors who lived with their spouses or children had a better quality of life than seniors living in nursing homes. "Ageing in situ" is a common term in geriatric health systems in which the continuity of the elderly life in the community is emphasized. It is said that the elderly prefer to live in their favorite place in order to maintain their independence and the limits of their free will, as well as to receive social support. An older adult who is in an environment that suits his physical, cognitive, and emotional needs has higher life satisfaction and comfort, so a place that gives the person more opportunities for activity and social participation will make the person feel healthier (26).

Another important result of the present study was the association of GSR with anxiety. It can be said that the increase in the level of anxiety was associated with an increase in the GSR score. This finding is in line with the findings of Zhang et al. in 2016 (27), the study of Piloto et al. in 2011 (28), Sanei et al. in 2017 (29), and the study of Al-Taha et al. in 2012(30). Anxiety is a common problem in old age. This period is filled with all kinds of feelings of deficiencies and disabilities. Elderly people are more prone to anxiety due to decreased self-confidence, lack of activity and mobility, loss of friends and relatives, decreased material and physical independence, and chronic diseases (31). Functional disorders of the digestive system are often associated with emotional disorders (depression and anxiety). The coexistence of gastrointestinal disorders with anxiety and stress is more or less observed not only in patients but also in normal people in society, which indicates the relationship between pathophysiological mechanisms of improper functioning of the digestive system and some psychological disorders such as anxiety (32). The present study also had some limitations: firstly, this study relied on information obtained from the elderly using a questionnaire. Second, due to the nature of the present study, the relationship between the GSR and related factors in the elderly is not permissible. Since the present study is a cross-sectional study and only examines the relationship between variables, future studies can be used to discover and confirm the relationship between the GSR and other factors.

CONCLUSION

This study aimed to investigate the factors related to the

GSR in the elderly in Neyshabur in 2023. The findings of this study indicated that the prevalence of GSR in the elderly was low. Therefore, it is recommended that comprehensive health services centers have programs focused on improving and preventing digestive disorders in the elderly.

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CONFILICT OF INTEREST

The authors have no conflicts of interest to declare related to this work.

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