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Investigation of Health Promotion Behaviors among the Elderly

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ABSTRACT

Background: Performing health-promoting behaviors is the most important and effective factor in maintaining the health of the elderly. Therefore, this study investigated health promotion behaviors and their related factors among the elderly population in Gorgan city .

Methods: This cross-sectional descriptive-analytical study was conducted in 2023. Using a multistage sampling method, four comprehensive health centers in Gorgan city, Iran, were randomly selected, and a total of 170 elderly individuals aged over 60 years were conveniently recruited into the study. Data were collected using the standardized Health-Promoting Lifestyle Profile II (HPLP–II) questionnaire. After data collection, the data were analyzed and reported using SPSS version 26 software and parametric statistical tests, including t-test, ANOVA, and Pearson correlation coefficient, at a significance level of less than 0.05.

Results: In this study, 44.1% of the elderly were male and 55.9% were female. The mean age of the participants was reported as 66.70 ± 7.23 years. A statistically significant difference was observed between the mean score of health promotion behaviors and demographic variables, including education level, economic status, and presence of underlying diseases ($p < 0.05$). Pearson correlation results indicated a positive correlation between health promotion behaviors and their subdomains ($p < 0.05$). The highest mean score was related to the interpersonal relations domain (32.28), while the lowest score belonged to the physical activity domain (13.52).

Conclusion: Considering the results and the importance of health-promoting behaviors, particularly the low average scores in physical activity and stress management, it is necessary to emphasize these areas. Implementing continuous education programs based on elderly surveys, alongside strategic planning to encourage their active participation in health-related matters, can enhance health promotion among the elderly population.

Keywords: Aged , Health Promotion, Lifestyle, Health behavior

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Introduction

The World Health Organization (WHO) defines healthy aging as the process of developing and maintaining functional abilities that enable well-being in older age. These abilities include meeting basic needs, learning, growing and making decisions, maintaining mobility, building and sustaining social relationships, and participating in society (Rudnicka et al., 2020).

Successful aging does not necessarily mean avoiding problems, changes, or deficiencies caused by old age; rather, it involves continuous effort, despite existing obstacles, to gain more and lose less (Habibi Sola et al.,2007).

The WHO defines health as complete physical, mental, and social well-being, not merely the absence of disease or infirmity (Barati, et al., 2012). Currently, approximately 600 million people worldwide are aged 60 years and over, a number projected to rise to 1.2 billion by 2025 and 2 billion by 2050, accounting for 21% of the total global population (Motamedi & Feizi, 2019). In Iran, the increase in life expectancy over the past five decades has led to a continuous rise in the proportion of elderly individuals (Nabavi et al., 2016) and the elderly population has increased six fold from 1956 to 2016, surpassing 7.4 million individuals. This figure is projected to rise from 6.5% to 17.5% by 2030 (Gerayllo et al., 2024).

Approximately 60% of medical care costs are allocated to the elderly population, indicating that this segment can impose a significant financial burden on themselves, their families, the healthcare system, and insurance providers (Ghanbari Moghadam et al., 2015).

Healthy lifestyle is one of the major determinants of health (Ghanbari Moghadam et al., 2015). It serves as a valuable resource for reducing the prevalence and impact of health problems, promoting health, adapting to life stressors, and improving quality of life. The concept of a healthy lifestyle varies according to individuals' culture, society, and living conditions (Zarei et al., 2018).

Health-promoting behaviors are major determinants of health and are recognized as fundamental factors in the prevention of many diseases. Both health promotion and disease prevention are directly related to these behaviors (Habibi Sola et al., 2007). Health-promoting behaviors are classified into six dimensions including nutrition, physical activity, stress management, health responsibility, interpersonal relations, and spiritual growth (Gurusamy et al., 2022).

Health-promoting behaviors emphasize positive lifestyle patterns that lead to improved quality of life (Ghaffari Nejad & Pouya., 2002). The U.S. Department of Health and Human Services highlights key factors for promoting health in the elderly, such as regular exercise, avoiding smoking, abstaining from alcohol consumption, proper nutrition, and age-appropriate immunization (Lee et al., 2006). Any behavior aimed at preventing or controlling these risk factors is considered a health-promoting behavior (Ghaffari Nejad & Pouya, 2002).

As individuals live longer, the importance of health-promoting behaviors becomes increasingly evident due to their role in maintaining functional ability, independence, and improving quality of life (Lee et al., 2006). Studies have shown that adopting health-promoting behaviors in old age leads to increased life expectancy, improved health status, and enhanced quality of life. Moreover, these behaviors contribute to reducing the incidence and severity of diseases, disabilities, and healthcare costs (Pour-Reza et al., 2006; Rashedi & Bahrami, 2015).

Since the elderly population is considered a vulnerable group facing age-specific challenges that can be prevented through lifestyle modifications (Shahnazi & Sobhani, 2016), and given that Iran's demographic pyramid is shifting toward aging, understanding and accurately assessing the lifestyle and health behaviors of the elderly is essential. Therefore, this study aimed to investigate health-promoting behaviors and their related factors among elderly individuals attending comprehensive health centers in Gorgan city.

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Methods

This cross-sectional descriptive-analytical study was conducted in 2023. The study population consisted of elderly individuals attending comprehensive health centers in Gorgan city. Based on the study by Rashidi and Bahrami (Rashedi & Bahrami, 2015), the standard deviation of health-promoting behaviors among the elderly was reported as 20. Considering an alpha level of 0.05, the required sample size was calculated to be 170 participants.

The sampling method of the study was multistage sampling. In this approach, health centers were considered as clusters, and four centers were randomly selected (two urban centers and two rural centers). A total of 170 elderly individuals covered by these centers were conveniently recruited into the study, with 40 participants from each of three centers and 50 from the fourth center, based on the number of elderly covered by each center.

After thesis approval and obtaining the ethical code, coordination was made with the county health center, and introduction letters were secured for the selected comprehensive health centers. Before data collection, the researcher explained the study objectives to the participants, and those who provided consent were included in the study. The questionnaires were self-administered.

It should be noted that the inclusion criteria required participants to be literate in reading and writing. Individuals with severe visual or hearing impairments, those suffering from psychological or cognitive disorders, and those with walking difficulties were excluded from the study.

The data collection tool consisted of a questionnaire including Part A demographic information questions according to the information form, and Part B utilizing the standardized Health-Promoting Lifestyle Profile II (HPLP–II). The questionnaire comprises 52 items divided into six subscales: stress management (8 items), health responsibility (9 items), spiritual growth (9 items), interpersonal relations (9 items), nutrition (9 items), and physical activity (8 items). Responses are scored on a 4-point Likert scale with options: never, sometimes, often, and always, corresponding to scores from 1 to 4. The total possible score ranges from a minimum of 52 to a maximum of 208. This questionnaire was developed by Walker et al. in 1997, and its internal consistency reliability was reported as 0.82 in the study by Mohammadi Zeidi et al. (Mohammadi Zeidi et al.,2012) and 0.87 in the study by Tahmasebi et al. (Tahmasebi et al.,2019).

The collected data were coded, analyzed, and reported using SPSS version 26 software. Descriptive statistical tests (mean and standard deviation) were used. Due to the normality of the data, parametric tests including t-test, ANOVA, and Pearson correlation coefficient were applied, with a significance level set at less than 0.05.

Results

In this study, a total of 170 elderly individuals in Gorgan city were examined. The mean age of the participants was 66.7 ± 7.23 years. Among them, 95 individuals (55.9%) were female. According to the collected data, the highest frequency of education level was primary school with 76 individuals (44.7%). Most participants, 82 individuals (48.2%), reported their economic status as average, based on their own assessment. Additionally, 116 elderly (68.2%) had underlying diseases, and 28 individuals (16.5%) reported using tobacco or narcotics (Table 1).

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Table 1. Frequency distribution of participants' demographic information

Demographic characteristics	Number	Valid percent	Demographic characteristics	Number	Valid percent
Sex			Economic status		
Male	75	44.1	Poor	68	40
Female	95	55.9	Medium	82	48.2
Place of residence			Good	20	11.8
City	80	47.1	Ethnicity		
Village	90	52.9	Persian	117	68.8
Education			Sistani	46	27.1
Illiterate	76	44.7	Other	7	4.1
Junior high school	60	35.3	Having an underlying disease		
High-school and above	34	20	Yes	116	68.2
Marital status			No	54	31.8
Single	6	3.5	Smoking and drug use		
Married	109	64.1	Yes	28	16.5
Dead wife	55	32.4	No	142	83.5
Job			Insurance type		
Homemaker	89	52.4	Social security	15	8.8
Employed	46	27.1	Health	59	34.7
Retired	35	20.6	Free	84	49.4
			Armed forces	12	7.1

The second part of the results examined the items of Health-Promoting Lifestyle Profile questionnaire. The frequency distribution of responses in interpersonal relations domain indicated that the lowest mean score was related to "finding ways to meet the need to be loved," while the highest score was for "praising others for their successes." In nutrition domain, the highest mean score was for "consuming breakfast" (3.55), and the lowest was for "checking food labels to be aware of their ingredients" (1.76). Regarding the health responsibility scale, the lowest mean score pertained to "participating in educational programs about personal care and hygiene," whereas the highest was for "accepting recommendations from health caregivers." In physical activity behaviors, "participating in light sports activities" had the highest mean score, while "exercising at least three times a week" had the lowest. For stress management items, the highest mean score was for "getting enough sleep" (2.97), and the lowest was for "thinking and reflecting 15-20 minutes daily." In spiritual growth scale, the lowest mean score was related to "challenging the routine and repetitive days of life," and the highest was for "feeling a strong force in life."

According to Table 2, the analysis of health-promoting lifestyle domain scores and the total score using independent t-tests showed statistically significant differences between genders in interpersonal relations, health responsibility, physical activity, and spiritual growth ($P<0.05$). Means and standard deviations were also reported. No significant differences were observed based on residence ($P > 0.05$). For underlying disease variable, significant differences were found in all subdomains except health responsibility ($P<0.05$). Moreover, regarding tobacco use, significant differences were observed in all subdomains except for physical activity and spiritual growth ($P < 0.05$) (Table 2).

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Table 2. Mean and standard deviation of health promotion behavior scores with demographic information of participants

Variable	Interpersonal communication		Nutrition		Health responsibility		Physical activity		Stress management		Spiritual growth		Health promotion behaviors	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Sex														
Male	22.56	4.22	23.53	4.81	21.93	5.3	14.18	3.47	18.45	3.15	21.88	4.79	122.54	20.58
Female	23.85	4.18	23.07	4.63	23.53	3.79	13.01	3.78	18.46	3.03	20.37	4.99	122.31	20.24
T-test	P = 0.048		P = 0.531		P = 0.029		P = 0.039		P = 0.984		P = 0.048		P = 0.942	
Place of residence														
City	23.32	4.33	22.72	4.39	22.43	4.63	13.96	3.59	18.58	2.91	21.18	4.84	122.22	19.85
Village	23.24	4.17	23.76	4.93	23.17	4.52	13.14	3.74	18.34	3.22	20.91	5.06	122.58	20.86
T-test	P = 0.902		P = 0.15		P = 0.294		P = 0.149		P = 0.608		P = 0.717		P = 0.908	
Having an underlying disease														
Yes	22.76	4.24	22.57	4.34	22.49	4.89	12.67	3.47	18.06	3	20.4	4.87	118.98	20.16
No	24.38	4.04	24.77	5.13	23.55	3.75	15.37	3.48	19.29	3.08	22.4	4.88	129.79	18.84
T-test	P = 0.018		P = 0.004		P = 0.122		P≤0.001		P = 0.015		P = 0.014		P = 0.001	
Smoking and drug use														
Yes	20.53	4.96	20.92	5.14	18.89	5.57	14.57	4.27	17.28	3.37	19.67	4.01	111.89	19.88
No	23.82	3.87	23.73	4.49	23.6	3.93	13.32	3.54	18.69	2.97	21.3	5.08	124.49	19.84
T-test	P = 0.002		P = 0.011		P≤0.001		P = 0.102		P = 0.048		P = 0.111		P = 0.002	

To examine the mean total score of health-promoting lifestyle behaviors and their domains across qualitative background variables, one-way ANOVA test was used. Statistically significant differences were found in all domains based on education level, with individuals holding a diploma or higher achieving higher mean scores ($P < 0.05$). Analysis across marital status categories also showed a significant difference only in interpersonal relations domain ($P = 0.043$). Moreover, significant differences were observed in interpersonal relations, physical activity, and spiritual growth domains based on employment status ($P<0.05$). According to one-way ANOVA, all domains showed statistically significant differences with respect to economic status, with those reporting good economic conditions having higher mean scores ($P < 0.05$). Regarding ethnicity, statistically significant differences were observed in all domains except health responsibility and stress management ($P < 0.05$). (Table 3).

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Table 3. Mean and standard deviation of health promotion behavior scores with demographic information of participants

Variable	Interpersonal communication		Nutrition		Health responsibility		Physical activity		Stress management		Spiritual growth		Health promotion behaviors	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Education														
Illiterate	22.26	3.66	22	4.14	21.65	3.79	11.96	2.75	17.61	2.64	18.98	4.13	114.48	15.64
Junior high school	24.08	4.98	24.35	5.12	23.68	5.11	14.73	3.79	19.15	3.28	22.53	4.93	128.53	21.75
High-school and above	24.14	3.55	24.23	4.53	23.94	4.7	14.91	4.04	19.11	3.2	23	5.03	129.35	21.29
ANOVA	P = 0.018		P = 0.006		P = 0.01		P≤0.001		P = 0.005		P≤0.001		P≤0.001	
Marital status														
Single	19.16	5.26	23.66	3.82	22.66	4.63	15.16	4.83	17	2.6	19.33	4.96	117	20.17
Married	23.57	4.06	23.08	4.7	22.52	5.1	13.7	3.79	18.45	3.22	21.62	4.68	122.97	21
Dead wife	23.14	4.3	23.61	4.84	23.45	3.29	13	3.3	18.61	2.81	20.07	5.33	121.9	19.24
ANOVA	P = 0.043		P = 0.775		P = 0.47		P = 0.279		P = 0.475		P = 0.114		P = 0.765	
Job														
Homemaker	23.47	4.02	23	4.73	23.42	3.73	13.05	3.87	18.51	3.11	20.02	4.95	121.49	20.17
Employed	24.06	4.46	23.06	5.1	21.86	4.62	13.36	2.74	18.54	2.82	23.23	4.08	124.15	18.5
Retired	21.77	4.21	24.25	4.04	22.57	6.13	14.94	4.01	18.2	3.35	20.74	5.18	122.48	23.3
ANOVA	P = 0.044		P = 0.385		P = 0.162		P = 0.034		P = 0.856		P = 0.001		P = 0.774	
Economic Status														
Poor	22.1	4.26	20.33	3.33	21.23	4.29	11.98	3.14	17.39	2.91	18.38	4.94	111.44	17.51
Medium	24.06	3.57	24.4	4	23.37	4.13	14.14	3.5	18.98	2.47	22.23	3.61	127.2	16.04
Good	24.1	5.72	28.65	4.76	26	5.24	16.25	3.97	19.9	4.52	25.2	5.15	140.10	25.3
ANOVA	P = 0.012		P≤0.001		P≤0.001		P≤0.001		P≤0.001		P≤0.001		P≤0.001	
Ethnicity														
Persian	23.99	4.19	24.06	4.77	22.94	4.61	14.17	3.93	18.47	3.06	21.81	4.81	125.72	20.81
Sistani	22.02	3.92	21.13	3.6	22.43	3.43	11.73	2.07	17.65	2.75	19.23	4.72	114.21	13.76
Other	19.71	3.59	24.14	6.14	23.57	9.34	14.57	4.23	19	4.61	20	6.08	121	33.40
ANOVA	P = 0.002		P≤0.001		P = 0.745		P≤0.001		P = 0.111		P = 0.009		P = 0.004	

Based on Pearson correlation results, there was a positive correlation between health-promoting behaviors and their subdomains. According to findings, the highest mean score was observed in interpersonal relations domain, while the lowest mean score was found in physical activity domain (Table 4).

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Table 4. Means, SDs, and correlation coefficient of statements of health promotion behaviors

Variables	1	2	3	4	5	6	7	8	Means	SDs	Minimum	Maximum
Interpersonal communication	1								23.28	4.23	13	32
Nutrition	0.434** P≤0.001	1							23.27	4.7	14	36
Health responsibility	0.497** P≤0.001	0.632** P≤0.001	1						22.82	4.57	12	33
Physical activity	0.496** P≤0.001	0.442** P≤0.001	0.461** P≤0.001	1					13.52	3.68	8	24
Stress management	0.617** P≤0.001	0.542** P≤0.001	0.603** P≤0.001	0.654** P≤0.001	1				18.45	3.07	12	26
Spiritual growth	0.707** P≤0.001	0.679** P≤0.001	0.511** P≤0.001	0.653** P≤0.001	0.749** P≤0.001	1			21.04	4.94	11	32
Health promotion behaviors	0.776** P≤0.001	0.791** P≤0.001	0.774** P≤0.001	0.748** P≤0.001	0.842** P≤0.001	0.895** P≤0.001	1		122.41	20.33	78	170
Age	-0.156* *P* = 0.042	0.124 *P* = 0.107	-0.007 *P* = 0.931	-0.099 *P* = 0.2	-0.01 *P* = 0.894	-0.072 *P* = 0.353	-0.042 *P* = 0.584	1	67.05	5.18	60	82

Pearson correlation test **(P<0.01)

Discussion

The present study was conducted to investigate health-promoting behaviors and their related factors among the elderly. According to the results, in interpersonal relations domain, the lowest mean score was for "finding ways to fulfill the need to be loved," while the highest score pertained to "praising others for their successes." This finding may stem from the participants' low literacy levels, with approximately 80% having only elementary or lower education. Additionally, insufficient training, particularly in life skills, and their economic status, where only 11.8% reported a good financial situation, may have contributed. Moreover, 68% of the sample had underlying disease. Considering that elderly individuals often have limited access to modern information and communication technologies and mostly occupy the first and second levels of Maslow's hierarchy of needs, they lack the capacity and resources to develop interpersonal skills and fulfill higher-level needs such as love and belonging. Consequently, the low score in finding ways to meet the need to be loved is understandable.

According to the results in nutrition domain, a high percentage of participants reported "consuming breakfast," while the lowest frequency was related to "checking food labels to be aware of their ingredients." The high breakfast consumption observed in this study can be attributed to cultural habits and societal norms. This pattern was also observed in the study by Azizi, et al. which found that 72% of adults consumed breakfast daily, while only 28% skipped it. These findings are consistent with those of the present study (Azizi, et al., 2007).

The frequency distribution of responses in health responsibility domain indicated that the lowest mean score was associated with "participating in educational programs about personal care and hygiene." In contrast, the highest score pertained to "accepting recommendations from health caregivers." Given health challenges faced by the elderly and their generally low health literacy, implementing effective strategies to encourage their participation in such programs becomes even more crucial. To increase elderly attendance in educational programs, the use of incentives or policies such as having a physician present, offering free medical consultations to participants, or providing necessary medications

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at no cost or at a reduced price-may help health workers overcome barriers to motivating attendance. Furthermore, according to the study by Khammarnia et al. which examined public trust in hospital services and healthcare staff, the trust score was 84% despite dissatisfaction with services. This finding is consistent with the present study, where "accepting recommendations from health caregivers" received the highest score (Khammarnia et al.,2020).

Among physical activity behaviors, "participating in light sports activities" had the highest mean score, while "exercising at least three times a week" had the lowest mean score. A similar result was reported in the study by Habibi Sola et al., in which more than 62% of the elderly participants engaged in light activities and were independent in performing daily tasks. However, due to decreased physical strength, lack of motivation, social and family problems, as well as some common chronic diseases in old age, reduced tendency to exercise regularly multiple times per week is not unexpected (Habibi Sola et al.,2007). In Madah's study which compared physical activity among elderly people in Iran and Sweden, it was found that the level of physical activity among Swedish elderly was approximately three times higher than that of Iranian elderly. In fact, physical activity has become a deeply ingrained social habit among the Swedish elderly (Madah, 2008).

Based on the results of stress management domain questions, a high percentage of participants reported "getting enough sleep," while the lowest mean score was related to "thinking and reflecting for 15-20 minutes daily." An interesting finding of this study was that most elderly participants reported sufficient sleep duration, which contrasts with the findings of Maghsoudi et al. (Maghsoudi et al., 2016). This discrepancy can be explained by the fact that, in old age, sleep quality decreases due to changes in sleep cycles and lighter sleep; however, since this study assessed only sleep duration, most participants reported sleeping enough in terms of time.

In this study, similar to the research by Shirmohammadi Fard et al. (Shirmohammadi Fard et al., 2020), the elderly scored low in stress management. Therefore, it is essential for healthcare authorities to pay special attention to factors that improve lifestyle and stress management. It is recommended that gentle exercises, such as yoga, be included in educational programs for the elderly and gatherings aimed at reducing stress and enhancing self-esteem or overall health be organized.

Based on the frequency distribution results of the spiritual growth domain in the study group, the lowest mean score was related to "challenging the repetitive days of life," while the highest mean score was associated with "feeling a strong force in life." Since our country is Islamic, Iranian elderly individuals generally have stronger religious beliefs due to cultural factors. According to cultural conditions, religious people tend to turn more to spiritual matters to cope with critical situations, often feeling the presence of a powerful force in their lives. This finding is consistent with the results of Rezaie Shahsavarloo et al. (Rezaie Shahsavarloo et al.,2015).

In the analysis of health-promoting lifestyle domains and the overall health-promoting lifestyle score using the t-test, the examination of means and standard deviations by gender showed statistically significant differences in domains of interpersonal relations, health responsibility, physical activity, and spiritual growth. In the study by Rashedi and Bahrami (Rashedi & Bahrami, 2015), no significant difference was found between gender and health behaviors, which may be due to the younger age of their study population, as differences in areas such as physical activity tend to become more pronounced between men and women at older ages. No significant difference was observed regarding place of residence. Similarly, Rashedi and Bahrami study found no significant difference (Rashedi & Bahrami, 2015); however, in the study by Shirmohammadi Fard et al. (Shirmohammadi Fard et al., 2020), the analysis of means and standard deviations by place of

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residence revealed significant differences in domains of interpersonal relations, health responsibility, physical activity, and nutrition. Regarding underlying disease variable, statistically significant differences were observed in all subgroups except health responsibility. Underlying diseases in individuals lead to loss of health and accelerated physical deterioration, which in turn affect physical and mental status of the elderly and can cause significant differences in most cases. Moreover, significant differences were observed among various subgroups and in the overall health-promoting lifestyle score regarding tobacco use. In all subgroups, non-smokers had higher mean scores. It is evident that tobacco consumption, besides its harmful effects on various organs of the body, can also reduce quality of life. Moreover, individuals who smoke often suffer from chronic pulmonary diseases due to adverse effects of smoking, which in turn affects their lifestyle and may negatively affect interpersonal relationships of the elderly.

In the analysis of the mean total score of health-promoting lifestyle behaviors using ANOVA, statistically significant differences were observed across all subgroups based on education variable, with individuals holding a diploma or higher achieving greater mean scores. Similarly, the study by Shirmohammadi Fard et al. (Shirmohammadi Fard et al., 2020) demonstrated a significant association between health-promoting lifestyle and education level, showing that elderly individuals with higher literacy had better health-promoting lifestyles, while illiterate elderly scored the lowest in this regard. This direct relationship appears logical, as increased education enhances individuals' awareness and their ability to access and understand resources. Therefore, it is recommended that educational programs be tailored to different literacy levels and presented in simple language across various topics.

Based on the results of the analysis of mean scores and standard deviations among marital status subgroups, a statistically significant difference was observed only in interpersonal relations domain. It can be inferred that elderly individuals living with their spouses do not feel a lack in their intra- and interpersonal communications due to having a companion. Moreover, the presence of a companion can serve as a motivating factor in fulfilling their social roles. Contrary to our findings, Shirmohammadi Fard et al. (Shirmohammadi Fard et al., 2020) reported no significant differences among marital status subgroups.

In subgroups of interpersonal relations, physical activity, and spiritual growth, the employment variable showed statistically significant differences. Specifically, in interpersonal relations and spiritual growth domains, elderly individuals who were self-employed or employed as staff scored higher. In physical activity subgroup, retired elderly participants had higher mean scores, which may be attributed to having more available time for exercise and physical activities, since retirees generally do not need to have another job for income.

According to the test results, statistically significant differences were observed in all subgroups based on economic status, with individuals in a good economic situation achieving higher mean scores. One of the reasons why many elderly people continue to work is their lack of financial ability to fully retire. Adequate income in old age can positively impact quality of life; in other words, elderly individuals whose annual income meets their living expenses are clearly in a better condition in areas such as nutrition compared to those with very low income in similar groups.

In ethnicity variable, statistically significant differences were observed in all subgroups except for health responsibility and stress management. In interpersonal relations and stress management, Fars ethnicity had higher mean scores compared to other ethnicities, which is consistent with the study by Shirmohammadi Fard et al. (Shirmohammadi Fard et al., 2020). However, in domains of nutrition, health responsibility, and physical activity, other ethnic groups scored higher than

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Fars ethnicity.

According to the results, there was a positive correlation between health-promoting behaviors and their subdomains and the highest mean score was observed in interpersonal relations domain, while the lowest was in physical activity. These findings can be explained by physical disabilities and underlying diseases common among the elderly. In contrast, Lin et al. reported the highest score in stress management domain, which differs from the present study (Lin et al., 2009). In the research by Rashedi and Bahrami, they found that elderly participants scored above average in spiritual growth and interpersonal relations (Rashedi & Bahrami, 2015). Similarly, Shirmohammadi Fard et al. reported that spiritual growth and interpersonal relations received the highest scores among six dimensions of health-promoting behaviors (Shirmohammadi Fard et al., 2020). In studies by Eghrari et al. (Eghrari et al., 2020) and Mansouri et al. (Mansouri et al., 2017), the mean scores for physical activity and nutrition were lower than those of other subscales. Likewise, Karimi et al. (Karimi et al., 2015), Gokyildiz et al. (Gokyildiz et al., 2014), Gharaibeh et al. (Gharaibeh et al., 2005), McElligott et al. (McElligott et al.,2009), Tol et al. (Tol et al., 2013), and Norouzinia et al. (Norouzinia et al., 2013) also reported the lowest scores in physical activity domain, which aligns with the findings of the present study regarding health-promoting behaviors.

One of the limitations of this study is its cross-sectional design. Since the present study focused exclusively on the elderly population, it is recommended that future research be conducted on a broader scale, encompassing all age groups and diverse ethnicities. Additionally, conducting interventional studies to evaluate the impact of relevant educational programs is suggested for future research.

Conclusion

Considering the results and the importance of health-promoting behaviors, which are influenced by various factors, and given the low average score in physical activity domain, it is recommended to develop programs that encourage elderly participation in health-related activities. In this regard, it is essential to address factors affecting these behaviors in order to improve them, with an emphasis on physical activity and stress management. It should also be noted that with increasing age, chronic diseases such as osteoporosis, diabetes, and hypertension become more prevalent; therefore, educational interventions aimed at increasing regular physical activity among the elderly are necessary. It is suggested that continuous education based on surveys of the target group be implemented to enhance the health promotion of the community covered as recipients of healthcare services.

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Conflict of Interest

The authors declare no conflict of interest.

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Ethical Considerations

All the study subjects gave informed consent to participate in the study.

Code of Ethics

IR.GOUMS.REC.1402.091

Authors' contributions

The study was designed by SG, MTB and ARA, and SG was responsible for collecting the data, and ARA gathered the data. Statistical analysis was performed by SGH. Also, SG and ARA wrote the first draft of the manuscript. All authors provided feedback on previous versions of the manuscript and approved the final version.

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