



Health-Promoting Behaviors and Self-efficacy of Health Behaviors in Ischemic Stroke Patients, Rafsanjan, 2019

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Abstract

Background: In recent decades, non-communicable diseases have been increasing for various reasons. This study aimed to evaluate health-promoting behaviors (HPBs) and self-efficacy of health behaviors (SHEBs) in patients with ischemic stroke admitted to the neurology ward.

Methods: The statistical population of this cross-sectional descriptive study included all patients with ischemic stroke during the first six months of 2019. The participants completed a demographic checklist, SHEBs questionnaire, and HPBs questionnaire. Independent t-tests, analysis of variance, and correlation coefficient were used to analyze the data.

Results: Data analysis showed that interpersonal support and stress scores were higher in men, and scores of taking responsibility, exercise, and HPBs were higher in non-natives. Stress score was higher in smokers, drug users, and people with primary education ($P < 0.05$). Also, the physical self-efficacy of men and all dimensions of SHEBs of non-natives were higher compared to other groups ($P < 0.05$).

Conclusion: There are apparent differences in HPBs and self-efficacy among stroke patients regarding gender, nativity, smoking, and substance use that should be considered to help them improve their HPBs and health self-efficacy.

Keywords: Health promoting behaviors, Ischemic stroke, Self-efficacy

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Introduction

Cerebrovascular diseases including ischemic stroke, hemorrhagic stroke, and cerebrovascular abnormalities are among the most essential and common neurological diseases in the world (1). Stroke happens when part of the brain loses function due to impaired blood flow and presents with acute neurological symptoms that last for at least 24 hours (2).

Stroke is one of the chronic non-communicable diseases (CNCD). Many factors play an important role in its occurrence such as environmental, nutritional, and occupational factors and lifestyle. Numerous risk factors such as diabetes, hypertension, high cholesterol, obesity, and sedentary lifestyle are involved in the development and progression of the disease (1).

Research has shown that most risk factors for cardiovascular diseases are related to behavior and awareness. As one of the main tools in changing patients' lifestyles, educational program can significantly reduce

risk-related behaviors and increase health-promoting behaviors (HPBs) (3, 4).

Awareness of people and their understanding of the risk factors of the disease and their motivation to reduce them cause lifestyle changes leading to health improvement and disease prevention (5). Before the COVID-19 pandemic, the pattern of death and disease had been changed from contagious diseases to CNCD related to lifestyle. Today, about 43% of all diseases in the world are CNCD and are expected to be increased to 60% by 2020 (6). Thus, lifestyle changes and HPBs play an important role in reducing death and managing the risk factors of CNCD, including unhealthy nutrition, alcohol consumption, smoking, substance abuse, obesity, and other high-risk behaviors (7,8).

The World Health Organization (WHO) defines HPB as "the process of empowering people to control and improve their health" (7,8). From Pender's point of view, HPBs are dynamic, continuous, and positive processes,



not merely disease-avoiding behaviors. These behaviors are activities that help maintain and improve health. (9) These behaviors are self-directed actions that increase individuals' self-actualization, optimal well-being, and productivity (10). Six important components of HPBs include interpersonal relationships, health responsibility, spiritual growth, stress management, nutrition, and physical activity (11).

There are several factors involved in performing HPBs. One of the individual and behavioral factors is the self-efficacy of health behaviors (SEHBs) (12). Self-efficacy (SE) is one of the constructs of Bandura's theory of social cognitive learning. It is an individual's belief in his/her confidence and ability to perform or avoid a particular behavior in a variety of situations (9). SEHBs is the perceived ability of a person to perform HPBs and exercise control over health habits. People who place more value on health self-efficacy (HSE) are more likely to engage in HPBs (12).

Over the past years, the WHO health promotion model (HPM) has gradually shifted to a newer multidisciplinary model. HPM is considered health as an event within a complex system of variables mixed with individual psychological and biomedical factors within an environmental and socio-ecological concept (13-16).

A combination of efforts for increasing awareness, changing behavior, and creating environments that support good health practice can facilitate lifestyle change (17).

Disease prevention works on the masses to prevent the occurrence of diseases, but the second method is developing habits and behaviors that lead to survival in well-being and health (18). Empowerment is another key that gives individuals the confidence to take care of themselves. Here, it is a question of choosing a person who can choose the path of HPB or has unhealthy behavior. In this method, increasing awareness causes a change in attitude and, ultimately, behavior change (19).

Bandura considers SE as an individual's judgment about his/her ability to perform a specific action. In other words, SE is a constructive ability by which human cognitive, social, emotional, and behavioral skills are effectively organized to achieve various goals (20).

Sarkar et al showed a positive and significant correlation between health-related behaviors (HRBs) and SE in people with diabetes in terms of health behaviors according to race and culture (21). SE promotes health in the field of diseases. In other words, SE means being confident in one's ability to perform good self-care practices and prevent complications (21).

Research shows that people with high SE are more likely to engage in challenging behaviors and have better interpretations of HRB (22,23).

Stroke is one of the diseases closely related to lifestyle and HRB. With this description, this study was carried

out to investigate behaviors that promoted health and quality of life in patients with ischemic stroke admitted to the neurology ward of Ali Ibn Abi Talib (AIAT) hospital in Rafsanjan in the spring and summer of 2019.

Methods

In this descriptive study, all patients admitted to AIAT hospital in Rafsanjan with the diagnosis of stroke were evaluated for six months. Inclusion criteria were conscious consent to participate in the study, no mental disorders, no aphasia, National Institutes of Health Stroke Scale (NIHSS) under 20, and appropriate level of awareness and communication to complete the questionnaire. Exclusion criteria included incomplete questionnaire and participants' lack of interest in participating in the study, stroke progression, and complications that reduce the patient's level of consciousness.

Data collection method

The Self-Rated Ability for Health Practice Scale (SRAHPS) and HPB Questionnaire were used to collect information.

We recorded the demographic characteristics of the participants including gender, age, marital status, being indigenous and non-indigenous, residence, education level, history of chronic physical and mental illness, history of smoking and drug use, and history of alcohol consumption.

The SRAHPS questionnaire, developed by Becker et al in 1993, contains 28 items that measure the SEHBs or health promoters in four dimensions: nutrition, mental health, exercise, physical activity, and responsibility for HRB. The response to the items is on a five-point Likert scale: not at all (zero), rare (1), sometimes (2), often (3), and always (4). Therefore, the minimum and maximum scores are ranged from zero to 112 for the whole questionnaire and zero to 28 for each dimension. SE score and its dimensions are calculated using the mean of responses (24).

A higher SE score indicates better SE. The validity and reliability of this scale were confirmed by Becker et al in the undergraduate student community using the retest method two weeks later. Pearson correlation coefficient for the whole scale was 0.73; it was 0.70 for nutrition, 0.63 for mental health, 0.63 for physical activity, and 0.69 for responsibility for health. Also, the reliability coefficient using Cronbach's alpha method was 0.94 for the whole scale and 0.81 for nutrition, 0.86 for mental health, 0.89 for physical activity, and 0.88 for responsibility for health (24).

HPBs Questionnaire

The HPB questionnaire used by Walker et al was administered. This tool measures HPBs regarding six dimensions: nutrition (having a diet pattern and food choice with six questions), exercise (following a regular exercise pattern with five questions), health

responsibility (10 questions), stress management (identifying the sources of stress and stress management practices with seven questions), interpersonal support (maintaining relationships with a sense of closeness with seven questions), and self-fulfillment (having a sense of purpose, seeking individual progress, and experiencing self-awareness and satisfaction with 13 questions).

In Iran, Mohammadi Zaidi standardized the Persian version of this questionnaire. Cronbach's alpha coefficient was 0.82 for the whole instrument and 0.64 to 0.91 for the sub-instruments. All cases had an acceptable case-total correlation (greater than 0.34). Test-retest results approved the consistency of the questionnaire and its sub-domains (25).

Data analysis

After collecting the data, they were analyzed through SPSS 18 and using independent t-test, and analysis of variance (ANOVA). Descriptive indicators were also presented using descriptive statistical tests in tables and graphs. The significant level was set at *P* value less than 0.05.

Results

One hundred and twenty cases of stroke were finally included in the study. Their demographic characteristics are provided in Table 1.

The results of the independent t-test showed that although the mean age of men (72.00 ± 13.86 years) was higher than the mean age of women (67.87 ± 19.80 years), there was not a significant difference between men and

women in terms of age ($P=0.185$).

The results of the independent t-test showed that the mean scores of interpersonal support ($P=0.020$) and stress management ($P=0.013$) of HPBs in men were significantly higher than those of women: There was no significant difference between the studied men and women in self-fulfillment ($P=0.842$), responsibility ($P=0.960$), exercise ($P=0.677$), and total score of HPBs ($P=0.442$) (Table 2).

Concerning the dimension of SEHBs, men's mean score of "physical SE" was significantly higher than the mean score of women ($P=0.042$). Nutritional SE ($P=0.676$), mental health SE ($P=0.784$), responsibility SE ($P=0.660$), and the total score of HBSE ($P=0.890$) were not significantly different between men and women (Table 3).

The HPBs and their dimensions in married subjects were not significantly different from single subjects ($P<0.05$).

In this study, the mean score of mental health SE of single individuals was significantly higher than that of married individuals ($P=0.003$). There was no difference between single and married patients in terms of other dimensions of SE of HRBs and their total score ($P<0.05$) (Table 4).

In this study, the mean scores of responsibility ($P=0.011$), stress ($P=0.044$), exercise ($P=0.030$), and the total score of HPBs ($P=0.004$) of non-natives (non-indigenous Rafsanjan residents) were significantly higher than the mean score of indigenous people (Rafsanjan residents) (Table 5).

The independent *t* test showed that the mean scores of SE of HRBs and all its dimensions in non-native individuals was significantly higher compared to native individuals ($P<0.05$).

Data analysis showed that, in general, there was no significant difference in the dimensions of HPBs and SE dimensions of HRBs between patients with a history of physical illness and no history of physical illness ($P>0.05$).

The results of independent t-test showed that among the dimensions of HPBs, the mean score of "stress" in patients with a history of smoking was significantly higher than that in patients without a history of smoking ($P=0.021$). In other dimensions, there was no significant difference between the two groups of non-smokers ($P<0.05$).

Data analysis showed that there was no significant difference between urban and rural patients in the dimensions of HPBs and SEHBs ($P>0.05$).

The statistical test results showed no significant difference regarding SE dimensions of HRBs between the group with a smoking history and others ($P>0.05$). The results showed that HPBs and SE of HRBs were not significantly different in patients with the history of drug use and no history of drug use ($P>0.05$).

Pearson correlation coefficients indicated no

Table 1. Demographic characteristics of patients with ischemic stroke

Indicator	Group	Number	Percent
Center	Male	57	47.5
	Female	63	52.5
Level of education	illiterate	57	47.5
	Primary school	28	23.3
	High school diploma	29	24.2
	College	6	5.0
Marital status	Married	116	96.7
	Single	4	3.3
Nationality	Native	106	88.3
	Non-native	14	11.7
Residency	Rural	53	44.2
	Urban	67	55.8
Background of physical illness	Negative	91	75.8
	Positive	29	24.2
History of smoking	Positive	37	30.8
	Negative	83	69.2
History of drug abuse	Positive	40	33.3
	Negative	80	66.7
Total		120	100

Table 2. Mean scores of HPBs and its dimensions in patients with ischemic stroke

Dimensions of health promotion behaviors	Male (n=57)	Female (n=63)	Total (n=120)	P value
	Mean ± SD	Mean ± SD	Mean ± SD	
Self-actualization	28.40 ± 4.62	28.22 ± 5.26	28.31 ± 4.95	0.842
Responsibility	33.37 ± 4.64	33.41 ± 4.94	33.39 ± 4.78	0.960
Interpersonal support	23.84 ± 3.13	22.33 ± 3.80	23.05 ± 3.56	0.020
Stress management	16.17 ± 3.33	14.67 ± 3.22	15.38 ± 3.35	0.013
Sport	17.33 ± 4.47	16.97 ± 5.04	17.14 ± 4.76	0.677
Health promotion behaviors	137.05 ± 14.49	134.59 ± 18.51	135.76 ± 16.70	0.422

Table 3. Mean scores of SEHPBs and its dimensions in patients with ischemic stroke

Dimensions of self-efficacy of health behaviors	Male (n=57)	Female (n=63)	P value
	Mean ± SD	Mean ± SD	
Nutritional self-efficacy	23.77 ± 3.89	24.09 ± 4.48	0.676
Mental health self-efficacy	23.07 ± 3.81	22.86 ± 4.61	0.784
Physical self-efficacy	24.10 ± 8.20	21.39 ± 6.15	0.042
Responsibility self-efficacy	23.02 ± 4.18	23.39 ± 5.12	0.660
Self-efficacy of health behaviors	92.12 ± 13.22	91.75 ± 16.23	0.890

Table 4. Mean scores of SEHPBs and its dimensions in patients with ischemic stroke

Dimensions of self-efficacy of health behaviors	Marital status	Mean ± SD	P value
	Nutritional self-efficacy	Single (n=4) Married (n=116)	
Mental health self-efficacy	Single (n=4) Married (n=116)	26.75 ± 4.90 23.84 ± 4.16	0.003
Physical self-efficacy	Single (n=4) Married (n=116)	25.25 ± 5.50 22.59 ± 7.35	0.477
Responsibility self-efficacy	Single (n=4) Married (n=116)	24.50 ± 5.51 23.17 ± 4.68	0.580
Self-efficacy of health behaviors	Single (n=4) Married (n=116)	105.50 ± 16.54 91.46 ± 14.61	0.062

Table 5. Mean scores of HPBs and its dimensions in patients with ischemic stroke

Dimensions of health promotion behaviors	Indigenous status	Mean ± SD	P value
	Self-actualization	Native (n=106) Non-native (n=14)	
Responsibility	Native (n=106) Non-native (n=14)	32.99 ± 4.79 36.43 ± 3.52	0.011
Interpersonal support	Native (n=106) Non-native (n=14)	22.94 ± 3.72 23.86 ± 1.87	0.370
Stress management	Native (n=106) Non-native (n=14)	15.16 ± 3.35 17.07 ± 2.89	0.044
Sport	Native (n=106) Non-native (n=14)	16.87 ± 4.86 19.21 ± 3.33	0.030
Health promotion behaviors	Native (n=106) Non-native (n=14)	134.16 ± 16.90 147.86 ± 8.23	0.004

relationship of the patients’ age with HPBs and their dimensions ($P > 0.05$).

Pearson correlation coefficient showed a significant and inverse relationship between mental HSE and the age of patients. There was no significant difference between age and other dimensions of SE of patients’ HRBs ($P > 0.05$).

The analysis of variance showed that SE was related to the level of education in terms of HPBs ($P = 0.041$). Turkey’s post hoc test showed that the average SE of individuals with primary education (30.3 ± 3.93) was higher than the average. The self-actualization score of illiterate individuals (27.09 ± 5.42) was significantly higher ($P = 0.046$).

The level of primary literacy was referred to education from grade one to grade five in primary school and high school education from grade six to diploma. The analysis of variance showed that the SE of HRBs and their dimensions were not related to the education level of patients ($P > 0.05$).

Discussion

This study aimed to investigate HPBs and HSE in 120 patients with ischemic stroke admitted to the neurology ward during six months in 2019.

Data analysis showed that the mean score of HPB in patients with ischemic stroke hospitalized in AIAT Hospital in Rafsanjan was 135.76. The mean score of HPBs in the study of Ghiyasvandian et al conducted to assess lifestyle and predict the factors affecting patients with transient ischemic attack was 125.65. The self-fulfillment dimension had the highest score, and the stress dimension had the lowest score (26). There have been many studies with similar or contradictory results. For example, in the study of Norouzinia et al, the dimensions of spiritual growth had the highest and physical activity had the lowest score among the students of the University of Medical Sciences (27). In the study of Ghiyasvandian et al, the physical activity dimension had the lowest score and the interpersonal relationship dimension had the highest score (26).

Niknamy et al showed that 55.6% of retirees had good HRBs (28). HPBs are among the significant determinants of health known as underlying factors in the absence of many diseases and health promotion and disease

prevention are directly related to these behaviors (29). According to studies, a health-promoting lifestyle contributes to a positive quality of life (30).

Statistics on the leading causes of death indicate that 53% of the causes of death are related to lifestyle and unhealthy behaviors (31). The American Health and Human Services Organization emphasizes regular exercise, avoidance of smoking and alcohol consumption, proper nutrition, and age-appropriate immunization to promote health in the elderly (32).

In this study, the mean scores of interpersonal support and stress dimensions of HPBs in men were significantly higher than the same values in women. In this regard, Agha Mohammadhasani et al showed that the average score of HPBs was significantly higher in men compared to women and in line with the present study, concerning the HPBs dimensions, the average scores of men in support, stress, and nutrition dimensions were significantly higher than those of women. Agha Mohammadhasani et al studied patients with myocardial infarction (33), but we studied patients with stroke. Here, the role of genetics, culture, and residence is quite obvious because both studies have been done in Rafsanjan for two consecutive years.

Mahmoodi et al did not find a significant difference between the HPBs of men and women in health care workers (34). Kalroozi et al. in a study in military hospitals found better HPBs in women than in men (35).

In Abdolkarimy et al study on health-workers, HPBs of women were higher than men (36). The inconsistency of the results can be attributed to the difference in the study population.

In this study HPBs and their dimensions in married subjects were not significantly different from those in single ones; although, there were only four singles out of 120 people studied. Agha Mohammadhasani et al revealed that the HPBs of married people were not entirely different from single people. Still, concerning the HPBs dimensions, the mean scores of self-fulfillment and support of married subjects were significantly higher than those of single subjects (33). Abdolkarimy et al and Mahmoodi et al (2015) achieved similar results too (34-36).

In the current study, the mean scores of all dimensions of HPBs, except interpersonal support, were higher in single individuals; although, they were not statistically significant. HPBs are multifactorial, but married people seem to have more permission for doing things related to health and a healthier lifestyle. In the present study, the mean scores of responsibility, stress, exercise, and total HPBs of non-natives were significantly higher, which were in line with the study of Norouzinia et al conducted on students (27). Contrary to our study, in Agha Mohammadhasani and colleagues' study, HPBs of native and non-native patients showed no difference (33). Non-natives seem to perform better HRBs to reduce the

disease incidence due to their special living conditions and perhaps economic conditions.

In general, data analysis showed no significant difference between the dimensions of HPBs of urban and rural patients. In Agha Mohammadhasani and colleagues' study, among the HPBs dimensions, the mean support score of patients living in urban areas was significantly higher than the mean score of patients living in rural areas (33). In the present study, in general, the HPBs of patients living in urban and rural areas were not significantly different. Sargazi et al found a significant relationship based on the place of residency (37).

It seems that improving the economic situation, increasing information, providing rural health centers, and improving the urban situation are affecting rural health behaviors. On the other hand, the health condition in rural residents is critical due to their closer proximity to the nature and the interactions with each other (38).

Data analysis showed that although the mean score of HPBs of patients without a history of physical illness was higher, there was no significant difference between the HPBs' dimensions of patients with a history of physical illness and no history of that. On the other hand, Agha Mohammadhasani and colleagues' study showed significantly higher HPBs score in patients without physical illness than people with a history of physical illness (33). Sadeghi et al and Abdolkarimy et al also achieved similar results (36,39) that are somehow in line with the present study.

Concerning the dimensions of HPBs, the mean "stress" score of patients with a history of smoking was significantly higher in comparison to patients without a history of smoking. Agha Mohammadhasani et al recorded a higher stress score in patients with smoking history as compared with patients without a history of smoking (33). This finding is consistent with the results of many studies that consider smoking as one of the factors affecting health status and increasing the incidence or progression of diseases, especially heart diseases (40,41).

Analysis of the results showed that the total score of HPBs of patients without a history of drug use was lower than patients using drugs; however, this difference was not significant. The stress of patients receiving drugs was significantly higher than other patients. The patients were less susceptible to drug use and were more stressed. Motaghi et al and Hosseinnejad & Klantarzadeh achieved similar results too (42,43).

In the present study, only two participants consumed alcohol that could not be evaluated according to the sample size. Agha Mohammad Hasani et al found no significant difference between the HPBs of alcohol-consuming and non-alcoholic patients (33). Several studies have reported similar results (29,40,44).

In general, the correlation coefficients indicated no relationship of HPBs and their dimensions with the

age of the patients. Abdolkarimy et al did not find any difference among people of different ages in the score of HPBs (36), consistent with the current findings and in conflict with the study of Labonté (45). It seems that older people observe more HRBs due to having more experience, higher awareness, and experiencing various diseases.

Among the dimensions of SE of HRBs, the mean score of “physical SE” of men was significantly higher than the mean score of women. Also, the mean score of mental HSE was significantly higher in single people compared to married people. The mean score of SE of HRBs and all its dimensions in non-native individuals was significantly higher than in native individuals. Pearson correlation coefficient showed a significant and inverse relationship between mental HSE and patients’ age.

Various studies have been conducted on the relationship between SE and HRBs (21,46,47). Sarkar et al (21) showed that in diabetic patients, the higher the level of SE, the greater the level of self-care behaviors.

Many other studies show a direct link between SE and HRBs. Robinson has identified self-efficacy as a strong predictor of self-care behaviors in the elderly with hypertension (46). In people with poor SE, it will be impossible to achieve behavior change or to develop health and HPBs. On the other hand, SE is an essential prerequisite for self-management in behavior change. Increasing SE increases self-care behaviors. SE is an essential prerequisite for behavior change. SE education for individuals, including the elderly, can make them self-sufficient by simplifying and dividing a task into smaller steps (47).

This study was performed on stroke patients admitted to the neurology ward. This issue may have affected how the questionnaires were completed. Therefore, generalizing the results should be taken with necessary care. Similar studies can be done on other diseases, populations, and cultures to better picture HRBs in diverse ethnic groups. Such studies will help in making significant health decisions.

Conclusion

HRBs and SE of it, have essential impacts on SCBs. Control of cerebrovascular diseases in our society requires improvement of HPBs and SE. We should encourage our community, especially older adults, to take care of themselves with HPBs and SE of these behaviors.

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Conflict of Interests

The authors declare that they have no conflict of interest.

Ethical Approval

Ethical Code was received from Rafsanjan University of Medical Sciences Ethics Committee under the number (IR.RUMS.REC.1397.195) and the confidentiality of the information was enforced.

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References

1. Aminoff MJ, Greenberg DA, Simon RP. Clinical Neurology. 10th ed. McGraw-Hill Education/Medical; 2015.
2. Ropper A, Samuels M, Klein J. Adams and Victor's Principles of Neurology. McGraw-Hill Education; 2019.
3. Khayat-zadeh-Mahani M, Goharpei S, Rostami HR, Jahantabinezhad S. Comparative study of quality of life in stroke patients in Ahwaz. Zahedan J Res Med Sci. 2012;14(2):86-90. [Persian].
4. Atashi V, Sheikh Abumasoudi R, Moghimian M, Hashemi M, Karimi T, Kashani F, et al. The effect of e-learning on the quality of life of patients with stroke. J Health Care. 2017;19(1):30-8. [Persian].
5. Fryer CE, Luker JA, McDonnell MN, Hillier SL. Selfmanagement programmes for quality of life in people with stroke. Cochrane Database Syst Rev. 2016;2016(8):CD010442. doi: 10.1002/14651858.CD010442.pub2.
6. World Health Organization (WHO). Noncommunicable Diseases. Geneva: WHO; 2017. Available from: <http://www.who.int/mediacentre/factsheets/fs355/en/>.
7. World Health Organization (WHO). Health Education: Theoretical Concepts, Effective Strategies and Core Competencies: A Foundation Document to Guide Capacity Development of Health Educators. WHO; 2012.
8. Hou SI. Health education: theoretical concepts, effective strategies and core competencies. Health Promot Pract. 2014;15(5):619-21. doi: 10.1177/1524839914538045.
9. Pender NJ, Murdaugh CL, Parsons MA. Health Promotion in Nursing Practice. 6th ed. Boston, MA: Pearson; 2010.
10. Alpar ŞE, Şenturan L, Karabacak Ü, Sabuncu N. Change in the health promoting lifestyle behaviour of Turkish University nursing students from beginning to end of nurse training. Nurse Educ Pract. 2008;8(6):382-8. doi: 10.1016/j.nepr.2008.03.010.
11. Hosseini M, Ashktorab T, Taghdisi M. Health promotion lifestyle in nursing students: a systematic review. Journal of Health Promotion Management. 2013;2(1):66-79. [Persian].
12. Fox MC. Social Support, Health Behaviors, and Academic Success in College Students [thesis]. East Carolina University; 2011.
13. World Health Organization (WHO). Cardiovascular Disease, New Initiative Launched to Tackle Cardiovascular Disease, the

- World's Number One Killer. Geneva: WHO; 2016. Available from: http://www.who.int/cardiovascular_diseases/en/.
14. Tountas Y. The historical origins of the basic concepts of health promotion and education: the role of ancient Greek philosophy and medicine. *Health Promot Int*. 2009;24(2):185-92. doi: 10.1093/heapro/dap006.
 15. Schnitzler A, Woimant F, Tuppin P, de Peretti C. Prevalence of self-reported stroke and disability in the French adult population: a transversal study. *PLoS One*. 2014;9(12):e115375. doi: 10.1371/journal.pone.0115375.
 16. World Health Organization. What is Health Promotion? 2016. Available from: <https://www.who.int/features/qa/health-promotion/en/>.
 17. Bartholomew LK, Parcel GS, Kok G, Gottlieb NH, Schaalma H, Markham C, et al. *Planning Health Promotion Programs: An Intervention Mapping Approach*. 2nd ed. San Francisco: Jossey-Bass; 2006.
 18. O'Donnell MP. *Health Promotion in the Workplace*. 3rd ed. Albany: Delmar Thomson Learning; 2002.
 19. Tengland PA. Empowerment: a goal or a means for health promotion? *Med Health Care Philos*. 2007;10(2):197-207. doi: 10.1007/s11019-006-9027-1.
 20. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev*. 1977;84(2):191-215. doi: 10.1037//0033-295x.84.2.191.
 21. Sarkar U, Fisher L, Schillinger D. Is self-efficacy associated with diabetes self-management across race/ethnicity and health literacy? *Diabetes Care*. 2006;29(4):823-9. doi: 10.2337/diacare.29.04.06.dc05-1615.
 22. Babaei S, Boroumand S. Relationship between lifestyle and cardiac self efficacy among people with heart failure. *Iran J Cardiovasc Nurs*. 2017;5(4):36-44. [Persian].
 23. Peyman N, Zadehahmad Z, Doosti H. The effect of education based on self-efficacy theory on self-care behaviors in patients with heart failure in Shahid Modarres hospital in Kashmar. *J Health Field*. 2018;5(4):1-7. [Persian].
 24. Becker H, Stuijbergen A, Oh HS, Hall S. Self-rated abilities for health practices: a health self-efficacy measure. *Health Values*. 1993;17(5):42-50.
 25. Mohammadi Zeidi I, Pakpour Hajiagha A, Mohammadi Zeidi B. Reliability and validity of Persian version of the health-promoting lifestyle profile. *J Mazandaran Univ Med Sci*. 2012;20(1):102-13. [Persian].
 26. Ghiyasvandian S, Sarbooz Hossein Abadi T, Zakerimoghadam m, Kazemnejad A. Lifestyle and effective factors among patients with transient ischemic attack. *Journal of Student Research Committee (JSRC) of Torbat Heydariyeh University of Medical Sciences*. 2019;1(1):73-82. [Persian].
 27. Norouzinia R, Aghabarari M, Kohan M, Karimi M. Health promotion behaviors and its correlation with anxiety and some students' demographic factors of Alborz University of Medical Sciences. *Journal of Health Promotion Management*. 2013;2(4):39-49. [Persian].
 28. Niknamy M, Namjoo A, Baghaee M, Atrkar Roshan Z. Survey the relationship between life satisfaction and health behaviors in elderly people referring to active retire mental centers. *J Guilan Univ Med Sci*. 2010;19(73):46-54. [Persian].
 29. Habibi Sola A, Nikpoor S, Rezaei M, Haghani H. Health promotion behaviours and level of activities of daily living and instrumental activities of daily living among elderly people in west region of Tehran: a cross-sectional survey. *Iran J Ageing*. 2007;2(3):331-9. [Persian].
 30. Beattie BL, Whitelaw N, Mettler M, Turner D. A vision for older adults and health promotion. *Am J Health Promot*. 2003;18(2):200-4. doi: 10.4278/0890-1171-18.2.200.
 31. Stanhope M, Lancaster J. *Community Health Nursing*. 5th ed. Mosby; 2000.
 32. Lee TW, Ko IS, Lee KJ. Health promotion behaviors and quality of life among community-dwelling elderly in Korea: a cross-sectional survey. *Int J Nurs Stud*. 2006;43(3):293-300. doi: 10.1016/j.ijnurstu.2005.06.009.
 33. Agha Mohammadhasani P, Safarian M, Sayyadi AR, Karimi A. The survey of Health promotion behaviors and self-efficacy of health behaviors in patients with myocardial infarction admitted to the cardiac care unit (CCU) of Ali-ibn Abitaleb Hospital in Rafsanjan: 2018. Thesis of general medi
 34. Mahmoodi H, Hasanpoor E, Zareipour M, Housaenpour H, Sharifi-Saqquezi P, Babazadeh T. Compare the health promoting behaviors among nurses, health and administrative staff. *Iran Journal of Nursing*. 2016;29(99):56-65. doi: 10.29252/ijn.29.99.100.56. [Persian].
 35. Kalroozi F, Pishgooie SA, Taheriyani A, Khayat S, Faraz R. Health-promoting behaviours and related factors among nurses in selected military hospitals. *Military Caring Sciences*. 2015;1(2):73-80. doi: 10.18869/acadpub.mcs.1.2.73. [Persian].
 36. Abdolkarimy M, Zareipour M, Mahmoodi H, Dashti S, Faryabi R, Movahed E. Health promoting behaviors and their relationship with self-efficacy of health workers. *Iran Journal of Nursing*. 2017;30(105):68-79. doi: 10.29252/ijn.30.105.68. [Persian].
 37. Sargazi M, Salehi S, Naji SA. A study on the health promoting behaviors regarding hospitalized older adults' health in Zahedan. *J Zabol Univ Med Sci Health Serv*. 2012;4(2):73-84. [Persian].
 38. Anabstani A, Behzadi S. Assessment of rural health level and Individual factors affecting it's in Meybod County, Yazd. *Spatial Planning*. 2013;3(1):1-18. [Persian].
 39. Sadeghi R, Zareipour MA, Akbari H, Khan-Beygi M. Mental health and associated factors amongst women referred to health care centers. *J Health Care*. 2011;13(4):1-9. [Persian].
 40. Motlagh Z, Mazloomi-Mahmoodabad S, Momayyezi M. Study of Health-promotion behaviors among university of medical science students. *Zahedan J Res Med Sci*. 2011;13(4):29-34. [Persian].
 41. Moeini B, Dashti S, Teymoori P, Kafami V, Mousali AA, Sharifi M, et al. Health-promoting behaviors among high school students in Hamadan in 2013. *Pajouhan Sci J*. 2015;13(3):49-57. [Persian].
 42. Hosseinnejad M, Klantarzadeh M. Study of lifestyle based on the Pender's Health Promotion model among students of Islamic Azad University. *Iran J Health Educ Health Promot*. 2014;1(4):15-28. [Persian].
 43. Motaghi M, Afsar M, Tavakoli N. Examination of the relationship between health-promoting behaviors and family characteristics in high school girl students. *J Urmia Nurs Midwifery Fac*. 2015;13(5):395-403. [Persian].
 44. Stafford J, Allsop S, Daube M. From evidence to action: health promotion and alcohol. *Health Promot J Austr*. 2014;25(1):8-13. doi: 10.1071/he14001.
 45. Labonté R. Health promotion in an age of normative equity and rampant inequality. *Int J Health Policy Manag*. 2016;5(12):675-82. doi: 10.15171/ijhpm.2016.95.
 46. Robinson T. *Hypertension Beliefs and Behaviors of African Americans in Selected Cleveland Public Housing [dissertation]*. Kent State University; 2012.
 47. Azad Bakht M, Taheri Tanjani P, Garmaroudi G, Sahhaf R, Shojaaee D. Validity and reliability of self efficacy of health practice scale (SRAHPS) in Iranian elderly. *J Sabzevar Univ Med Sci*. 2015;22(2):490-8. [Persian].