

Influencing factors on health promoting behavior among the elderly living in the community

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ABSTRACT

Introduction: Health promotion behavior is one of the main criteria for determining health that is recognized as the basic factor in catching numerous diseases. Observing such behaviors by the elderly prevents affliction to various diseases and has potential effect in promoting health and increasing the elderly quality of life. This research was done for the aim of determining effective factors on health promotion behaviors and health status in the elderly of the Dena province. **Materials and Methods:** One hundred twenty elderly of over 65 years of age were selected randomly to do this descriptive-analytical study (cross-sectional type). The questionnaire regarding health promoting lifestyle profile 2 (HPLP2) was used for measuring the rate of health promotion behaviors. The data was collected by personal interviews and face to face method for completing the relevant questionnaire and was analyzed by SPSS software version 20 and also proper tests. **Results:** The average score of the elderly health promotion behaviors in the Dena province (143.8) indicated the acceptable level of performing health promoting behaviors in this group, such that 85% of the elderly had intermediate health promoting behaviors and 15% had proper behaviors. Also, the results showed that the average score of the physical activity and nutrition sub-measuring conditions was lower than the average score of other sub measures of prevention had the highest average. Moreover, comparison of the correlation of health promotion behaviors with the sub-measures showed that apart from the healthy nutrition sub-measure, all the other sub-measures have significant correlation with health promotion behaviors. **Conclusion:** From the findings of this study, the authors recommend health providers to promote elderly health promotion behaviors in all communities by identifying health promotion behaviors in other parts of the country, and also designing suitable intervention programs based on effective factors on health promotion behaviors of the elderly people.

Key words: Elderly, health promoting behavior, pender model

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INTRODUCTION

Improving the lifestyle, health care, increasing age and life expectancy have provided the old age phenomenon in the communities.^[1] According to the records of world health organization (WHO), there were 600 million elderly people in the world in the year 2000 that will reach to 1.2 billion in 2025 and 2 billion in 2050. Accordingly, the elderly people have the fastest population growth rate among different age groups and about two third of the elderly population in the world live in the developing countries such as Iran.^[2]

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Statistical indices show that the trend of elderly population in Iran has started. In 1996, public census showed that 6.62% of Iranian population is formed by the people over 60 years of age. This rate was 7.26% in the 2006 census and it is predicted for this rate to increase to 11.5% by 2026.^[3] The increasing trend of the elderly population in Iran shows that the authorities will face tremendous problems regarding the elderly people. Hence, old age and specific conditions of the elderly, as well as providing physical, mental and social health of them are among the problems that require special attentions.^[4]

Although increasing the population of the elderly is considered as a success in health and social/economic development policies, but it is regarded as a main challenge for the present era. Increasing the population leads to prevalence of inabilities that pressurize caring, health and social systems. Thus, regarding the needs or receiving health and therapeutic services, comprehensive and complementary care and services for the elderly, getting informed from the health conditions and the differences in prioritizing service and care provisions, and also new caring services for different age levels of the elderly are verily felt. By increasing the elderly population, the governments are obliged to be more considerate about that population. Enormous investments are used in today's industrial world, for the requirements of that age group that include the needs such as treatments, rehabilitation, paper nutrition, dwelling and leisure times. Developing countries confront great problems in providing the service to this population. Not only they have no ability for providing different public services in this respect but also they could not provide proper responses to the elders principle needs.^[5] Performing health promotion behaviors is one of the best ways for people to control their health.^[6]

The possibility in death, for the people who have unhealthy lifestyles shows a 20% increase for the duration of 5 years. These results emphasize the importance of maintaining the healthy lifestyle from the beginning of life and with no consideration of vascular diseases history.^[7] Changes in the lifestyle of the people affected by cardiovascular diseases have more potential shares in reducing vascular problems than medicinal treatments of hypertension and high cholesterol. By convincing more people to maintain and obtain healthy lifestyles, there will be considerable reduction in emergence and disabilities due to cardiac problems.^[7] Health promotion behaviors in the elderly have potential effects in promoting health and quality of life and reducing the cost of health care services.^[8]

The cost of having a normal weight in adults is almost \$ 1,584 less than the obesity due to the diagnostic examinations, doctors' fees and medicine. In the era of increasing health care costs, it is predicted that national costs can be reduced by healthy lifestyle promotion that reduces the emergence of disability and hence the need for health services.^[9] A great share of annual cost for health care in United State is related to cigarettes (8%), alcoholic beverages (2-3%), obesity (1-9%) and inactivity (2%).^[9]

According to the studies, the health promoting lifestyle helps the increase in quality of life.^[10,11] Also the presented data about the main reasons of mortality indicate that 53% of mortality reasons is related to the lifestyles and unhealthy behaviors.^[12,13] The fulfilled studies about the lifestyle and health promoting behaviors in Iran show that the most prevalent cause of mortality in age groups over 50 years of age that includes cardiovascular diseases, cancer, pulmonary diseases and accidents is related to prevalent preventive risk factors dependent on the lifestyles.^[14] Despite the importance of issue the studies and researches in regards to effective factors on the elderly lifestyle and health promotion behaviors by using suitable theoretical frameworks is not sufficient.

One of the widespread models used in various studies in the world is the Pender model of health promotion. The presented model by Pender is comprehensive and predictive, used for analyzing health promotion behaviors. In other words, this model exhibits the theoretical framework that is used for discovering effective factors on health promotion behaviors and hence, it could be appropriate for improving health and the quality of life. In 1987, Pender described his health promotion model as a framework for expressing healthy behaviors that is based on the movement of individuals towards a positive situation for improving the health; his model emphasizes the importance of cognitive processes and controlling the behaviors.^[15] There are several reasons for choosing this model as study framework.

- The health promoting behaviors have complex natures that affected by several factors. This model can provide a suitable framework to understand these behaviors
- Family support, friends and health care workers are considered as important factors for obligations regarding healthy behaviors. Hence, this model that introduces health care workers, friends and family as important resources for the obligations towards healthy behavior seems to be effective in creating the required behavior
- This model is used for a wide range of healthy behaviors such as hearing protections, primary diagnosis of cancer, admitting drugs and medicine, etc., and it seems that it has general applications in all the healthy behaviors, but it has not been considered in different populations
- Although widespread research has been done on the health for the elderly, but there have been few research about health promotion behaviors and effective factors on the health of old people on the basis of Pender model in this class of population
- Although HPM model has been used as a framework for some studies, but it has not been adequately used as a causation model in health behaviors of different communities.

Hence, regarding the importance of the subject and due to lack of previous studies, this research was done for the aim of considering effective factors on health promotion behaviors and health status of the elderly in Dena, according to some of the components of the Pender model. The resulted information could describe the efficiency of Pender health

promotion model, in describing selected variables in Iranian old people.

MATERIALS AND METHODS

The present research is a descriptive-analytical study of cross-sectional type aiming to determine effective factors on health promotion behaviors in the elderly people in the Dena province. The participants in this study include 120 elderly people who had their residence in Dena Province, were able to communicate and who had no serious health problem. The simple random sampling was used to select the elderly from family profiles in health care centers who had a 65 and over age member. About half of the participants were male and the rest were female and after attracting their trust, we interviewed them and completed the relevant questionnaire. The collection of data was by face-to-face interview, but in essential cases the interviews were done on telephone calls together with the in-person interview. Such that if a person was not present at home or did not have the time for the interview, some parts of the interview (demographic specifications) were done by his house or from other people in his family and the rest of the interview for filling out the questionnaire used to be done by a telephone call by getting the person's telephone number. The time for filling a questionnaire was 30 to 45 min. On average and the total duration for completing all the questionnaires was 2 months. Since the population had over years of age and the number of questions were rather too many, we used two sessions, at times to complete the questionnaires. Finally, the data was analyzed by SPSS software version 20 and statistical tests consisting of, descriptive statistics, *t*-test, Spearman's Correlation, and Pearson's Correlation Coefficient. The criterion for statistical significance was $P < 0.05$.

Health Promotion Lifestyle Profile 2 (HPLP2) was used for measuring the health promotion behaviors. This questionnaire was provided according to Pender health promotion model, to measure the rate at which people perform health promotion behaviors. This questionnaire has been adapted from Walker et al. tools. Alpha-Cronbach coefficient reported by Walker et al. was 94%.^[16] The primary scale of this questionnaire includes 48 items that measure health promotion behaviors in different dimensions: Nutrition, physical activity, responsibility for health, stress management, inter-personal support and self-actualization. The tools were reconsidered in 1995. The modified tools consisted of 52 items that measure health promotion behaviors in 6 different dimensions: Responsibility for health, physical activity, nutrition, prevention, inter-personal relations and stress management.^[17] We used the validity measuring questionnaire of Anahita Babak by reported alpha-Cronbach coefficient 75%.^[18] By giving suitable scores to each question in the 6 dimensions of health promotion, the total lifestyle score was determined. In this case, the score of "1" was given to the answer that showed the most inappropriate level of lifestyle, and the increasing appropriateness obtained the scores of 2, 3, 4 and 5, respectively. To calculate the score of each dimension for

healthy life, the total obtained score was considered from the question related to the same dimension. To calculate the total score of healthy lifestyle, the total of different dimensions was calculated. Since 3 levels (inappropriate, intermediate and proper) were considered. Categorization was done as follows: Score of 42-98 as inappropriate healthy lifestyle, 99-155 as intermediate healthy lifestyle and 156-211 as proper healthy lifestyle.

RESULTS

The data regarding this research is from 120 elderly people over 65 years of age from the Dena province. The average age of these people was 73.1 ± 6.9 . 50.8% were male and 49.2% were female. Most of the elderly participants were illiterate (78.3%). Also, 65.8% were married and the rest were widows or widowers. Regarding income, 68.3% relied on themselves and 31.7% were dependent on their families. Thirty-one point seven percent had good income, 10.8% had rather good income, 36.7% had moderate income and 20.8% had no proper or weak income. Forty-nine point two percent of the elderly were villagers and 50.8% were residing in the city. Sixty-two point five percent lived with their husbands and children, 23.3% lived with their children, 0.8% lived with their families and 13.3% lived on their own. The mean and standard deviation for the health promotion behaviors and its sub-scales are observed in Table 1. The mean score of health promotion behavior sub-scales in this study are as follows: Prevention 75.52, interpersonal social relations 67.44, stress management 55.41, healthy nutrition 49, and physical activities 43.94. As it is seen in Table 1, using analysis of variance significant differences were observed between health promotion behaviors and the sub-scales of stress management, physical activity and interrelations between men and women. The difference was not significant about the sub-scales of healthy nutrition and prevention.

Pearson's correlation shows Table 2 shows that there are significant relations between age and health promotion behaviors as a whole ($P = .004$, $r = -.26$) and sub-scales of physical activities ($P = .001$, $r = -.29$),

Table 1: Mean and standard deviation for the total health promotion behaviors and its sub-scales in women and men

ANOVA	Total		Men		Women		Sex variable
	SD	Mean	SD	Mean	SD	Mean	
$P=0.000$	10/7	57/5	11/3	58/7	10/2	56/2	Total health promotion behaviors
$P=0.002$	11/8	55/4	10/8	58/9	11/9	51/9	Stress management
$P=0.000$	17/8	43/9	18/06	50/7	14/6	36/9	Physical activity
$P=0.211$	8	49	8/1	48/09	7/8	49/9	Healthy nutrition
$P=0.004$	10/4	67/4	10/9	70/1	9/2	64/6	Social relations
$P=0.871$	8/3	75/5	8/9	75/6	7/7	75/3	prevention

SD = Standard deviation, ANOVA = Analysis of variance

social relations ($P = .000$, $r = -.34$) and prevention ($P = .045$, $r = -.18$), such that by increasing the age, the rates of health promotion behaviors as a whole and sub-scales of physical activities, interpersonal social and prevention would reduce. Moreover, there were no significant relations between age stress management scales and healthy nutrition.

The relation between educational level of the old people and health promotion behaviors and their sub-scales are shown in Table 3. Spearman correlation test shows by increasing the level of education, the health promotion behaviors ($r = .21$, $P = .01$) and the sub-scales of physical activities ($r = .23$, $P = .01$), stress management ($r = .19$, $P = .03$) and social relations ($r = .26$, $P = .004$) would increase, but no significant relations were observed between literacy and the subscales of prevention and healthy nutrition ($P > 0.05$).

Mean score of health promotion behaviors and its sub-scales, regarding the elderly living conditions are shown in Table 4. One way ANOVA test shows that health promotion behaviors as a whole and the sub-scales of stress management, physical activities and prevention have significant relations

with the living conditions of the elderly ($P < 0.05$), such that stress management, physical activities and preventive measures in the elderly people who live with their spouses and children have significant difference with other individuals. The situation of health promotion behaviors and their sub-scales regarding the marital status of the old people is shown in Table 5. The data in Table 5 about health promotion behaviors as a whole and the sub-scales of stress management, physical activities and social relations indicate the significant difference between married elderly people and other individuals. No significant relations have been observed in the other sub-scales.

The relation between health promotion behaviors for the elderly and its sub-scales and the residential places of the old people is shown in Table 6. One way ANOVA shows significant relationship between the residing place of the old people and the health promotion behaviors as a whole and the sub-scales of stress management and preventions ($P < 0.05$), such that the residence of rural area had better total health promotion behaviors and prevention. Residences of urban had better stress management behavior.

Correlation among health promoting behaviors' sub-scales present in Table 7. The results indicated that there is a significant correlation between stress management and social relations, physical activity and prevention sub-scales ($P < 0.05$, $r > 0$). There is not any significant relation between healthy nutrition and other sub-scales.

Table 2: Correlation between total health promotion behaviors, its sub scales and age

Variable	Age	
	r	P
Health promotion behaviors	-0/26	0/004
Stress management	0/076	0/408
Physical activity	-0/298	0/001
Healthy nutrition	-0/013	0/89
Social relations	-0/349	0/000
Prevention	-0/183	0/045

Table 3: Correlation between total health promotion behaviors, its sub scales and literacy

Variable	Literacy	
	r	P
Health promotion behaviors	0/217	0/017
Stress management	0/192	0/036
Physical activity	0/232	0/011
Healthy nutrition	0/161	0/08
Social relations	0/262	0/004
Prevention	0/157	0/086

Table 4: Correlation between total health promotion behaviors, its sub scales and living condition

P value	Total		Alone		Living with family		Living with children		Living with spouse		Living conditions variable
	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	
0/001	9/99	57.52	11/22	135/93	0	132	8/02	142/82	9/54	146/01	Health promotion behaviors
0/004	11/84	55/41	11/65	51/3	0	33/3	11/50	51/19	11/2	58/16	Stress management
0/016	17/80	43/94	17/19	35/83	0	20	15/7	39/52	17/79	47/64	Physical activity
0/828	8	49	10/35	50/25	0	50	7/87	49/64	7/6	48/48	Healthy nutrition
0/052	10/48	67/44	8/67	61/38	0	64/28	10/07	66/45	10/64	69/14	Social relations
0/046	8/38	75/52	8/77	70/42	0	69/64	6/95	77/29	8/50	76/02	Prevention

SD = Standard deviation

DISCUSSION

Health promotion behavior is regarded as one of the main criteria in determining health, identified as the principle factors in catching numerous diseases and health promotion and prevention from diseases are directly related to these behaviors.^[19] The present study, examined health promotion behaviors and its effective factors of the elderly in the province of Dena, by using the standard questionnaire of HPLP2.

The present investigation showed that 85% of the old people had intermediate behaviors for health promotion and 15% had suitable behaviors. This result could be due to the attention of the authorities in recent years towards the old age problems, as a priority and executing the pilot plan or the integrated cares for the old people in the province of Dena.

Table 5: Correlation between total health promotion behaviors, its sub scales and marital status

P value	Total		Widows		Married		Marital status variable
	SD	Mean	SD	Mean	SD	Mean	
0/001	9/99	57.52	9/50	139/75	9/59	145/9	Health promotion behaviors
0/001	11/85	55/41	10/57	50/40	11/70	58/01	Stress management
0/000	17/80	43/94	14/57	35/60	17/86	48/27	Physical activity
0/157	8	49	8/42	50/43	7/72	48/25	Healthy nutrition
0/006	10/48	67/44	9/52	63/85	10/53	69/30	Social relations
0/464	8/38	75/52	8/47	74/73	8/37	75/92	Prevention

SD = Standard deviation

Table 6: Correlation between total health promotion behaviors, its sub scales and residential district

P value	Total		City		Rural		Residential district variable
	SD	Mean	SD	Mean	SD	Mean	
0/036	9/9	57.52	11/2	141/9	8/1	145/7	Health promotion behaviors
0/01	11/85	55/41	13/27	57/92	9/61	52/82	Stress management
0/729	17/80	43/94	18/60	43/38	17/08	44/51	Physical activity
0/910	8	49	8/37	48/91	7/66	49/08	Healthy nutrition
0/454	10/48	67/44	11/76	68/14	9/03	66/7	Social relations
0/002	8/38	75/52	9/33	73/24	6/57	77/87	Prevention

SD = Standard deviation

Table 7: Correlation between health promoting behavior sub-scales

Social relations	Healthy nutrition	Physical activity	Stress management	
			$r=0/366^{**}$ $P=0/000$	Physical activity
		$r=-0/086$ $P=0/35$	$r=-0/048$ $P=0/6$	Healthy nutrition
	$r=-0/172$ $P=0/06$	$r=0/509^{**}$ $P=0/000$	$r=0/297^{**}$ $P=0/001$	Social relations
$r=0/085$ $P=0/354$	$r=0/040$ $P=0/664$	$r=0/325^{**}$ $P=0/000$	$r=0/236^{**}$ $P=0/009$	Prevention

** = 0/01

The mean score for the health promotion behaviors in the elderly people in this research was 57/5 (from 100) that in comparison to other studies using HPLP2 had a rather higher value. This average has been reported to be 50/5 in Yazdi elderly people (a city in Iran), by Morovati *et al.*^[20] and 55/8 in the investigation by Wang,^[21] in the women villagers with 60-69 years of age, and 51/3 in the old women with 80-88 years of age. The mean score is reported by Acton to be 58/3 for the elderly people in America.^[22]

The results of present study demonstrated that the mean score for health promoting behavior in men was significantly higher than women, in Morovati study there was not any significant differences between mean score for health promoting behavior in two sex.^[20] Although, in Pender and colleague study

mean score for health promoting behavior in women was significantly more than men.^[23] Because of low rate of social participation in old women in our country it is expected that they have low health information in comparison with men.^[20] Based on our study result mean score for stress management, physical activity and social relations in men was more than women, this result also supported by Morovati study.^[20]

Mean score for the health promoting behavior sub-scales was 75/2, 7/44, 55/41, 49, and 43/94 for prevention, social relations, stress management, healthy nutrition and physical activity.

Mean score for prevention was higher than other sub-scales. It is while the nutrition sub-scale in Morovati^[20] study was higher than the other sub-scales. However, the results of both researches and also the studies by Wang^[21] and Adams *et al.*^[23] showed that the participants in all the three investigations were in the lowest level, regarding the physical activities. Physical activity and healthy nutrition mean scores in our study were lower than the scores of other sub-scales. The most common behavior regarding the physical activity was daily activities such as doing house work. Among the nutritious aspects consuming of local bread with bran had the highest level. Hence regarding the importance of these two groups of behaviors (physical activity and healthy nutrition) in promoting health of the elderly people, interventional programs with focus on those behaviors is recommended. As mentioned earlier, the behaviors regarding prevention, in present study were in better conditions than other sub-scales and not drinking alcoholic beverages was the most common behavior among them. This case seems to be logical due to the Islamic beliefs of the participants.

According to this study results there was a negative significant relationship between age and health promoting behavior and sub-scales of physical activity, prevention and social relations this was consistent with Wang study.^[21] With the result of this study we can speculate that decreasing family attention and support and some movement limitation can lead to low social communication and encouraging the elderly to follow health promoting behavior. In analyzing the effect of marital status on health promotion behaviors and the sub-scales, it was found that health promotion behaviors as a whole and the sub-scales including stress management, social relations and physical activities in married old people are significantly more desirable. In the study by Scott,^[24] it was also found that marital status has relations with health promotion behaviors as a whole and the sub-scales of physical activities, healthy nutrition and preventions. The findings were also in conformity with the findings of Wang.^[21]

In considering the relation between the literacy level of the elderly people and health promotion behaviors and its sub-scales, it was found that by improving the literacy level, the level of health promotion behaviors and the sub-scales of stress management and physical activities would increase. These findings are in conformity with the results obtained by Morovati^[20] and Sonhng, Yeom.^[25]

The results of this study showed that the old people living with their spouses and children have the highest rates of physical activities and are more successful in their stress management. This is because the old people living with their families may be younger than the other old people and could be more active.

The health-promoting lifestyle for old people has become an important public issue. This study focused on the health promoting behavior of old people living in Dena province. The most distinctive findings of this study facilitate identification of influencing factors on elderly health promoting behavior in special social and cultural condition that can be applied in health promotion interventions for this age group in district. Regarding the high average rates for the health promotion behaviors of the participants in this study, it is proposed to execute the care plan for the elderly, which is now applied in Dena city as a pilot plan, in other parts of the country. Healthcare services should emphasize giving information on health promoting behavior among the elderly to promote their health status and quality of life. Also the findings of this study helps the development of the new, comprehensive and culture-based approaches that reduce the obstacles and promote the feeling of capability in the elderly, helping them to get more involved in related activities to their own health.

This study had several limitations. Physical and emotional conditions of the elderly can affected the elderly response to questionnaire, to reduce this effect researchers tried to complete the questionnaire during two session and also for some demographic data elderly families provided information. Because of some cultural and social conditions in study field we cannot generalize the findings to other parts of the country thus, the findings point to the need for further research in other districts of country that have different socio-cultural conditions.

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