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Comparison of Health-Promoting Lifestyle and Health Locus of Control in Individuals with Hypertension and Healthy Individuals

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Abstract

Introduction: Increase in the prevalence of hypertension has become a major health problem nowadays. It seems that psychological factors are involved in this chronic disease. The aim of the current research was to compare the health promotion lifestyle and the health locus of control in both individuals with hypertension and healthy individuals.
Method: The present study was a causal-comparative research in which 100 healthy individuals and 100 individuals with hypertension were selected through convenience sampling. To gather the data, the Health Promoting Lifestyle Profile (HPLP) and the Multidimensional Health Locus of Control (MHLC) were used, and data were analyzed by independent t-test.
Results: Findings indicated that among the subscales of lifestyle, there are significant differences between the subscales of physical activity ($p < 0.01$), nutrition ($p< 0.01$), and interpersonal relationship ($p < 0.01$) in both groups. In terms of health locus of control, there are significant differences in the subscales of chance control ($p < 0.01$) and external locus of control ($p< 0.01$).
Conclusion: Accordingly, health promoting lifestyle and health locus of control are two main psychological constructs related to hypertension. Therefore, focusing on these factors can be useful in the prevention and treatment of this chronic disease.

Keywords: Hypertension, Health-Promoting Lifestyle, Health Locus of Control

Introduction

One of the public health problems in developed and developing countries is hypertension, which is defined by systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥90 mmHg [1] . According to statistics, more than one milliard people suffer from hypertension in the world. It has been estimated that by 2015, 1.56 milliard people will suffer from this disease. Hypertension is also one of the most common health problems in Iran. Lack of control of this disease is accompanied by complications such as heart attack, heart failure, stroke, chronic kidney disease, vision loss, and vascular diseases [2] . Statistics indicate that hypertension is the primary death factor in chronic diseases. According to the WHO report in 2014, almost 14104 people die because of hypertension [3] . At the same time, the diagnosis level of this disease, its awareness, treatment, and control in the world is low [4]. Identifying the developing constructs play an essential role in the prevention and control of this disease. It seems that psychological constructs such as selecting a healthy lifestyle, and its promotion as well as one's belief in having control over his/her health can help prevent and control this chronic disease.

Lifestyle is defined as the daily conventional and ordinary activities that are accepted by individuals. It is estimated that up to 60 percent of one's quality of health and life depends on his/her behavior and lifestyle [5]. An inappropriate lifestyle is one of the factors affecting the emergence of chronic diseases such as colon cancer, hypertension, and cardiovascular diseases [6]. The factors that cause chronic diseases, include: obesity, an inappropriate

diet, salt intake, physical inactivity, alcohol consumption, and smoking [7]. Obviously, without making changes in this effective factor, there will be irreparable consequences in the future. Lifestyle changes require a change in behaviors that make up a considerable part of daily habits [6] . On the other hand, health promotion lifestyle is considered to be the health contributing activities [5, 8]. Those who have healthy behaviors in their lives can protect themselves from different kinds of illnesses and as a result can experience a more complete life [9]. Generally, studies on the relationship between lifestyle and hypertension suggest that factors such as nutrition, stress, and physical activity are associated with hypertension [10-12]. This is while there is little evidence in regards to the other dimensions of lifestyle such as spiritual growth, interpersonal relationships, and health responsibility. In addition, studies show that the culture of the community in which a person lives causes significant differences in health promoting lifestyle behaviors associated with hypertension and its subscales, including health responsibilities, nutrition, interpersonal protection, and stress management [13]. It is encouraged to more widely study different countries and cultures in order to investigate the role of psychological constructs in this disease [14]. It seems that increasing information in this area is necessary to counter hypertension and reduce its therapeutic costs.

On the other hand, it seems that one of the psychological constructs affecting health and disease is the health locus of control. It is an important construct that is less addressed compared to other factors. Health locus of control is a construct based on the control locus concept and social learning theory, which is used in the health area. Health locus of control points out to the individuals' beliefs about factors affecting health [15, 16]. This psychological construct can influence the quality of life [17]. An individual with internal health locus of control is more likely to believe that the promoters are related to his own endeavors, thus, he attempts for preventing the disease. While, an individual with external health locus of control probably thinks that his life is determined by external forces, thus, ignores self-care activities for preventing the disease or considers it as useless. In addition, the patients with internal locus of control search for information, they consider themselves responsible for maintaining or improving their physical health, they know more about conditions causing physical health, and they would probably do necessary measures for improving their health [18]. In addition, in research related to hypertension, it has been observed that patients with internal locus of control are more persistent in observing medical regimen and accepting drugs compared to patients with external locus of control [19, 20]. Overall, studies have indicated that health locus of control is regarded as one of the health indexes for planning health education programs and is considered as a construct for the perception and prediction of health related behaviors [21]. However, a few number of studies have addressed the impact of health locus of control on hypertension, which necessitates conducting more research for understanding hypertension and health locus of control.

Considering the fact that nowadays hypertension is one of the main health problems in communities, and that it has considerable costs in terms of economic and health, the attempt for identifying factors related to hypertension is crucially significant. This is due to the fact that accurate understanding of the influence of psychological, environmental, and physiological factors on this chronic disease is the first step for addressing the growing prevalence of hypertension in communities. To this end, the current research was conducted in order to compare health promoting strategies and health locus of control in individuals with hypertension and healthy individuals.

Method

The present study is a causal-comparative research. The statistical research population included all individuals with hypertension and also healthy individuals who had referred to health centers in Tehran in 2019. The sample size consisted of 100 individuals with hypertension and 100 healthy individuals who were selected by convenience sampling method according to the inclusion and exclusion criteria. The inclusion criteria included: the age of 15 to 60 years old, literacy to read and write, hypertension diagnosed by a physician, and at least 6 months after the diagnosis (in the case of hypertension group). The exclusion criteria included: history of chronic and special diseases other than hypertension in the group with hypertension, chronic and special disease history in the healthy group, and severe psychiatric disorders under medical therapy.

The tools used in this study are as follows:

Demographic Information Collection Questionnaire

The respondents responded to the demographic variables (age, sex, educational level, marital status, and occupation) as well as questions related to the inclusion and exclusion criteria.

Health Promoting Lifestyle Profile (HPLP)

This scale was first designed by Walker et al. in 1987. The questionnaire has 52 items, and aims to measure health promotion behaviors (nutrition (8 items), physical activity (9 items), health accountability (8 items), stress management (9 items), interpersonal relationships (9 items), and spiritual growth (9 items)). Individuals respond on a Likert scale (never, sometimes, often, and always) from 1 to 4. Walker et al. calculated Cronbach's alpha coefficient for the overall score of this profile as 0.94, and 0.88 - 0.90 for its six subscales [22]. In Iran, the structural validity was evaluated and confirmed by exploratory factor analysis. Also, the Cronbach's alpha coefficient for the whole tool and for the subscales were 0.82, and 0.64-0.91 respectively. The results of the test-retest indicated a consistency for health promoting lifestyle profile and its subscales [23] .

Multidimensional Health Locus Control (MHLC)

Multidimensional health locus control was firstly developed by Wallston et al. (1978) for determining health locus of control. The MHLC is composed of a total of 18 items, including the internal locus of control (items 13, 12, 7, 6, 1, and 17), the chance locus of control (including items 15, 11, 9, 4, 2, and 16) and the powerful others locus of control (items 14, 10, 7, 5, 3, and 18). Participants should

respond to items in a 6-point Likert scale from 1 to 6 (completely disagree, disagree, slightly disagree, slightly agree, agree, and completely agree). The reliability of this scale was reported by Cronbach's alpha coefficient for internal control components as 0.68, chance control as 0.74, and others control as 0.51 [24]. In Iran, the concurrent validity of the questionnaire was 0.57, 0.49 and 0.53 respectively. The reliability of this scale using Cronbach alpha coefficient were acceptable for internal (0.68), powerful others (0.72), and chance (0.66). The test-retest reliability indices, after a time interval of 4 weeks, were 0.60 for internal, 0.58 for chance, and 0.74 for powerful others [25].

All participants were met individually, and the research goals were explained to them. They were assured about their information being confidential and that participation was completely voluntary. The questionnaires were given to those individuals who wanted to participate in the research. After data collection, data were analyzed using SPSS software. For statistical investigations, independent t test and descriptive statistics were used.

Results

Individuals with an average age of 41.08 ±12.37 entered the study. Among them, 49.5 percent were female (n=99), and 50.5 percent were male (n=101).

The results of the correlations between variables in both groups are shown in Table 1.

Table 2 shows a comparison of the subscales of health promoting lifestyle between both groups.

Table 2 reveals that a statistically significant difference in regards to physical activity ($p < 0.01$), nutrition ($p < 0.01$), and interpersonal relationships ($p < 0.01$) in both the hypertension and healthy group. This is while, no significant difference was observed in health accountability ($p>0.05$), spiritual growth ($p > 0.05$), and stress ($p > 0.05$). Health promoting lifestyle indicated no significant difference in both the hypertension (27.40) 130.7 and health groups (17.12) 134.41 (05/0p>، 12/1-t=).

Table 3 shows health locus of control in individuals with hypertension and healthy individuals.

Table 2 indicates that there is a statistically significant difference in regards to health locus of control between the hypertension and healthy group in terms of chance locus of control ($p < 0.01$) and external locus of control ($p<0.001$). This is while, no significant difference was reported in internal locus of control ($p < 0.05$).

Table 1. Matrix of correlation between health promoting lifestyle and locus of control in both groups

	1	2	3	4	5	6	7	8	9	10
Health Promoting Lifestyle	1									
Health Responsibility	0.762**	1								
Physical Activity	0.702**	0.464**	1							
Nutrition	0.669**	0.502**	0.386**	1						
Spiritual Growth	0.815**	0.478**	0.393**	0.436**	1					
Interpersonal Relationships	0.806**	0.539**	0.440**	0.364**	0.680**	1				
Stress	0.803**	0.526**	0.537**	0.437**	0.604**	0.631**	1			
Chance Locus of Control	-0.095	0.037	-0.002	-0.097	-0.169*	-0.094	-0.082	1		
Internal Locus of Control	0.536**	0.438**	0.267**	0.425**	0.417**	0.481**	0.432**	-0.005	1	
External Locus of Control	0.407**	0.515**	0.136	0.386**	0.267**	0.277**	0.313**	0.212**	0.502**	1

*Correlation is significant at 0.05 level (2-tailed)

**Correlation is significant at 0.01 level (2-tailed)

Table 2. Mean, SD, and independent t-test results for comparing groups in the dimensions of health promoting lifestyle

Subscale	Hypertension n=100	Healthy n=100	t	P-value
	Mean (SD)	Mean (SD)		
Health Accountability	23.39 (5.46)	22.85 (4.3)	0.78	0.43
Physical Activity	15.58 (5.19)	17.28 (0.05)	-2.35	0.02
Nutrition	23.39 (4.61)	21.83 (4.11)	2.52	0.012
Spiritual Growth	25.38 (7.93)	27.05 (4.73)	-1.81	0.072
Interpersonal Relationships	24.97 (5.67)	26.54 (3.85)	-2.28	0.023
Stress Management	18.08 (4.53)	18.86 (3.36)	-1.38	0.169

Table 3. Mean, SD, and independent t-test results for comparing groups in dimensions of health locus of control

Subscale	Hypertension n=100	Healthy n=100	t	P-value
	Mean (SD)	Mean (SD)		
Health Locus of Control	19.65 (7.09)	17.79 (4.85)	2.16	0.032
Internal Locus of Control	26.44 (4.08)	27.01 (5.34)	0.85	0.398
External Locus of Control	25.85 (6.79)	21.89 (4.70)	4.46	0.0001

Discussion

The aim of the present research was to compare health promoting lifestyle and health locus of control between individuals with hypertension and healthy individuals. Results indicated that there is no significant difference in the total score of health promoting lifestyle between the hypertension group and healthy group, while healthy individuals had higher scores compared to the individuals

with hypertension. A significant difference was observed between the subscales of health promoting lifestyle, nutrition, physical activity, and interpersonal relationships. However, the two groups had no significant difference in the subscales of health accountability, spiritual growth, and stress management. The study by Saber Moghadam et al. [26] also reported a low average score for lifestyle in nutrition, stress control, and physical activity dimensions in relation with hypertension. Agha Molaei et al. [27] and Baroogh et al. [28] acknowledged that lifestyle score was undesirable in relation to hypertension management. Studies show that according to the health promotion style model, if individuals receive appropriate support from the community and the environment, motivational mechanisms are formed in them and lead to health promotion behaviors [29]. Therefore, care recommendations for the prevention and control of hypertension should be related to lifestyle modification [30]. The present study showed that the hypertension group had lower scores in the subscale of physical activity compared to the healthy group, and the difference in the two groups was statistically significant. This finding is in line with previous studies [31, 32] . Studies have shown that physical activity has a positive impact on a number of chronic diseases, including cardiovascular disease, diabetes, hypertension, and obesity [11]. A review study showed that physical activity reduced hypertension among adults with hypertension [33]. It seems that physical activity, in addition to physical effects, is a kind of coping strategy that helps reduce stress and increases psychological well-being. To this end, hypertension can be prevented and managed through promoting physical activity. In the subscale of interpersonal relationships, individuals with hypertension had lower scores compared to the healthy individuals, which was statistically significant. This finding was consistent with the findings of previous studies, which indicated that increased interpersonal conflicts such as anger, hostility, and lack of social support are associated with the emergence of hypertension [34, 35]. Daily interpersonal conflict is associated with an acute increase in cardiovascular response, and with time and the continuation of these stresses, orthostatic cardiac loading decreases as along with the ability to improve cardiovascular responses [34]. Based on the findings of previous studies, there is a significant and positive relationship between interpersonal relationships, social support, behavior and lifestyle [36-38]. Individuals who talk with others regarding their main problems and issues and are supported by their friends and family members and experience less feelings of loneliness, which as a result helps manage stress and blood pressure. In addition, having friends and family members who are concerned about the health of a patient will remind him/her to take regular medication and follow up regular visits by the doctor, which will increase the patient's acceptance of medication [36]. In the subscale of nutrition, individuals with hypertension gained higher scores in the nutrition dimension than healthy individuals, and reported a healthier diet. Previous findings have shown that 65 to 75 percent of hypertension incidence is directly related to obesity and is a result of unhealthy nutrition [39]. On the contrary, those with hypertension in the present study gained a high score in the nutritional aspect. This result can be explained as hypertension has caused individuals to make their best efforts to increase their health and as a result, eat healthy food. In describing this finding, a study has indicated that old people with hypertension have shown higher willingness to preserve health-promoting behaviors, especially healthy nutrition [12]. Thus, increasing nutritional knowledge, changing beliefs about unhealthy foods and the support of influential friends and family members are effective in the emergence of healthy nutritional habits and their persistence. This issue is due to the fact that the support and companion of the family is one of the factors which has an effect on following nutritional diets [40] . Regarding the subscale of spiritual growth, although the results indicated that spiritual growth was higher in the healthy group compared to the hypertension group, this difference was not statistically significant. Another study has indicated that a positive relationship exists between the spiritual beliefs of individuals and their mental health [41]. Studies on the relationship between spirituality and other chronic diseases have indicated that higher levels of spirituality are associated with lower levels of disease progress over time [42]. It seems that spiritual attitudes cause people to have higher resilience and promoting capacities such as forgiveness and show more suitable responses when facing difficult situations. These individuals can manage stressful situations much better, and as a result, live healthier lives.

The other subscale is stress management. Although research findings have indicated that the stress management score was higher in the healthy group compared to the hypertension group, this difference was not statistically significant. It seems that the disability of individuals in managing stressful factors such as financial instability, workload, family responsibility, future of family and children causes hypertension and leads to lower levels of self-care behaviors in individuals. The disability to manage stress with increased responsiveness to the sympathetic system and reduced responsiveness to the parasympathetic system affects blood pressure [43]. Hence, learning adaptive coping strategies by reducing the stress response to stressors can both protect people from chronic diseases and help manage illness in people who are infected. Regarding the subscale of health accountability, although the results of the study showed that the health accountability score in the hypertension group was higher than that of the healthy subjects, this difference was not statistically significant. This finding is in contrast with the findings of Li et al., which concluded that people with hypertension have a lower score in terms of health accountability compared to healthy subjects. According to previous studies, the reason for low health accountability is considered to be poverty,

lack of support from health centers as well as low educational levels [44]. One of the probable reasons for higher scores of health accountability in individuals with hypertension in this study is the place of sampling. Sampling was carried out in health clinics where individuals with hypertension were trained for controlling their disease. To this end, training and promotion of health should be strengthened in local health and medical centers.

In regards to the health locus of control scale, the current research findings have indicated that individuals with hypertension gained significantly higher scores than the healthy individuals in the chance locus of control and others locus of control subscales. In addition, in the subscale of internal locus of control, healthy individuals gained higher scores than individuals with hypertension, though the difference was not significant. This finding is consistent with the findings of previous studies [45]. It can be stated that, locus of control is one of the constructs related to chronic diseases including hypertension. Thus, locus of control indicates one's belief about having control over his/her conditions or it being controlled by others. Individuals with internal locus of control believe that they are the decision maker about their health related behaviors, and consider themselves responsible for their health. They are able to control their hypertension and do their very best to manage it. In contrast, individuals with external locus of control adopt a passive position and assign their health responsibility to other factors such as chance, physician, fate, and other influential individuals. They believe that hypertension is their fate and changing their destiny is completely useless. Thus, they ignore having a healthy diet, do not have exercise, and do not pursue the physicians' advices. These behaviors reveal the emergence and non-controllable disease situation in these individuals [46] .

The present research faced some limitations. As a result, the generalization of results must be done cautiously. The cross-sectional nature of the study limits causal explanation of the findings. In addition, the measurement of the research variables was done using self-report questionnaires. To this end, it is suggested that other data collection methods such as interview or experimental research be used in the future studies. Practically, it is suggested that experts pay attention to psychological constructs such as lifestyle and health locus of control in patients with hypertension. Making an attempt to change the behaviors and beliefs related to lifestyle and health locus of control may help prevent and control hypertension through educational and psychological interventions.

Conclusion

Considering physical, economic, and social consequences of hypertension, paying attention to the related and determinant factors of hypertension and making an attempt for modifying unhealthy life patterns including physical inactivity, disability in managing stress, unhealthy diet, and other deficiencies in social and psychological factors seems necessary. Effective and efficient strategies in the formation of intervention programs and psychological training along with physical interventions can be used for realizing this goal.

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