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Relationship between hypertension with irrational health beliefs and health locus of control

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Abstract:

INTRODUCTION: Hypertension is one of the major health threats in the world today. The purpose of this study was to find the relationship between hypertension with irrational health belief and health locus of controls.

MATERIALS AND METHODS: The current work is a descriptive (case-control) study. One hundred patients with hypertension and 100 healthy individuals were included in the study through available sampling method. The Irrational Health Belief Scale and Multidimensional Health Locus of Control questionnaire were used. Data were analyzed using independent *t*-test and logistic regression.

RESULTS: The findings showed a significant relationship between the variables of irrational health beliefs and the external health locus of control in hypertension. For a unit increase in an irrational health belief score, the chance of having high blood pressure increases by 6%, and for a unit increase in the score of external health locus of control, there is a 17% higher chance of having hypertension. The independent *t*-test of irrational health belief also showed a statistically significant difference between the two groups ($P < 0.01$). There was also a statistically significant difference regarding the health locus of control in the two groups of hypertension and healthy individuals in the subscale of chance control ($P < 0.01$) and external locus of control ($P < 0.01$).

CONCLUSION: The results of this study make it necessary to identify irrational health beliefs as well as the health locus of control in individuals. Modification of these structures can be useful in the prevention and management of this chronic disease.

Keywords:

Health locus of control, hypertension, irrational health belief

Introduction

Hypertension is a chronic, noncommunicable, cardiovascular syndrome that has become a critical problem in many developing countries.^[1] Hypertension is generally defined as systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg.^[2] In Iran, the prevalence of hypertension among healthy men and women in five metropolitan cities (Tehran, Tabriz, Mashhad, Shiraz, and Bushehr) was reported to be 26.21%.^[3] Failure to control hypertension will be accompanied

by complications such as heart attack, heart failure, stroke, chronic kidney diseases, vision loss, and vascular disease.^[3] An estimated 4.9 million deaths occur every year due to complications from hypertension.^[4] As this disease may not be controlled by medication,^[5] it is necessary to identify related factors, including psychological factors, to prevent and manage the disease. Individuals' beliefs about health and belief in locus of health control are among the psychological constructs studied in health and disease domains.

Unhealthy behaviors have been identified as the leading cause of chronic diseases.^[6] One

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of the effective elements in health behaviors is people's beliefs. Beliefs are thoughts that determine how to interpret and give meaning to events and regulate the quality and quantity of behaviors and emotions. People's beliefs play a central and significant role in their physical and mental health.^[7] Studies have shown that one's beliefs about health and disease significantly predict drug acceptance.^[8] In addition, education based on the health belief model affects the physical activity of women at risk of hypertension and can also help patients' change in behaviors that increases the risk of disease.^[9] Studies on irrational health beliefs in other chronic diseases (such as irritable bowel syndrome) suggest that irrational health beliefs can predict poor health in chronic patients.^[10] Various studies have investigated the relationships between cognitive systems, especially irrational beliefs and emotional disturbances such as anxiety, depression, and physiological arousal such as hypertension.^[11] Studies suggest that psychological factors are involved in the onset, spread, and persistence of heart disease.^[12]

On the other hand, it seems that one of the psychological constructs affecting health behaviors is the health locus of control in an individual. This construct points to one's beliefs about the origin of life events; some believe that their life events are due to their own attitudes and behavior, whereas others believe that the events are under the control of forces outside themselves.^[13] The health locus of control is divided into three types. Individuals believe that they are responsible for their own health (internal control), or that their health is due to luck (chance control), or that their health is under the control of "powerful people" such as physicians.^[14] Previous studies have shown that people who think that they have little control over their health, compared to those who have a stronger sense of control, have poorer health habits and more illnesses and are less likely to take active steps to treat the disease.^[15]

Considering the issues raised, the fact that hypertension has become one of the major health problems in the society today, and due to a great deal of cost and effort every year to treat and control this disease economically and healthily, it is important to identify the factors associated with high blood pressure because different environmental, physiological, and psychological factors can be effective in preventing and controlling this disease. However, there is a research gap on the relationship between irrational health beliefs and the health locus of control and hypertension. Accordingly, the purpose of the present study was to find the relationship between hypertension with irrational health beliefs and the health locus of control.

Materials and Methods

In the present study, the method was descriptive (case-control). The statistical population of the study

consisted of all hypertensive and healthy individuals referred to health centers in Tehran in 2019. After referring to health centers and obtaining permission for sampling, a sample of 100 hypertensive and 100 healthy individuals was selected by available sampling method

according to the formula: $n \geq 2 \frac{(z_{\alpha/2} + z_{\beta})^2 \sigma^2}{(\mu_1 - \mu_2)^2}$ and

inclusion and exclusion criteria. Inclusion criteria were age between 20 and 60 years, being literate, those with a diagnosis of hypertension by physician, and those with an elapse of at least 6 months after diagnosis (in the case of hypertensive patients). Exclusion criteria were patients with a history of special and chronic disease except hypertension in the group with hypertension, those with a history of specific and chronic diseases in the healthy group, and patients with severe psychiatric disorders under medication. All participants were informed about all the necessary ethical recommendations inherent to a project developed with humans, such as aims of the study, confidentiality of their data, and their right to withdrawal in any time of the study. After obtaining participants' consent, they completed the questionnaires.

Measures

Demographic data collection questionnaire

Participants in this study answered demographic variables (age, education, marital status, and occupation) as well as questions regarding inclusion and exclusion criteria.

The Irrational Health Beliefs Scale

This scale was developed in 1999 by Christensen *et al.* This scale is a 20-item self-report scale. In this scale, after describing the beliefs, the assessment of the situation is made, and the participants must answer on a 5-point Likert's scale as follow: (1) I will never have such thought; (2) to a certain extent, I will have such thought; (3) I will somehow have such a thought; (4) I will often have such thought; and (5) I will always have such thought. They had to choose to show to what extent their assessment of their situation is similar to the circumstances of the situation they are considering. The individual's response to each item is summed together, and the mean of the number obtained indicates the extent of one's irrational beliefs about their health status. The higher a person's score, the higher is the irrational beliefs. The minimum score that can be obtained from this scale is 20 and the maximum score is 100. The construct validity of the scale was reported by examining its relationship with the HLOC (health locus of control), PANAS (positive and negative affect scale), and BFI (Big five inventory) questionnaires. In addition, internal consistency, through Cronbach's alpha, was obtained as 0.84, and the test-retest reliability over an 18-month period was 0.57.^[16] In Iran, the surface, content, and convergent validity of the scale were of

good quality. In addition, Cronbach’s alpha was 0.86 and the test–retest reliability was 0.64.^[17]

Multidimensional Health Locus of Control scale

The Multidimensional Health Control Scale was developed in 1978 by Wallston *et al.* to determine the health locus of control for individuals. Using this scale and employing a set of specific characteristics, it is determined that the individual has a source of internal or external health control. The health locus of control has a total of 18 items, including internal locus of control, chance locus of control, and others’ locus of control. Participants must respond to the items in a 6-point Likert’s scale (strongly disagree, disagree, slightly disagree, slightly agree, agree, and strongly agree). The scoring method is that all items in the questionnaire have 6 items and are scored from 1 to 6. As a result, the individual score will range from 6 to 36 for each subtest, which are not summed and are estimated independently. The predictive validity of the scale was obtained by its relation to optimal health status. In addition, the reliability of the questionnaire using Cronbach’s alpha coefficient in the components of internal control was 0.68, chance control was 0.74, and the control of others was 0.50.^[18] In Iran, the construct validity of these three variables was 0.57, 0.49, and 0.53. Cronbach’s alpha for internal locus of control was 0.68, external locus of control was 0.72, and of chance locus of control was 0.66, and the test–retest reliability for internal locus of control was 0.6, chance locus of control was 0.58, and for strong individuals was 0.74.^[19]

Statistical analysis

Data were analyzed using SPSS-IBM software version 22.0 (University of Chicago Chicago, IL, USA), and the results were presented in table form. Descriptive statistics were used for calculating demographic scores. Independent *t*-test and logistic regression were used for data analysis.

Results

Two hundred individuals with a mean age of 12.37 ± 41.08 years were included in this study. In this study, 49.5% of the participants were female ($n = 99$) and

50.5% of the participants were male ($n = 101$). Nearly 36% of the sample were single and 64% were married. Almost 42% of the participants had a degree below high school diploma and 58% had a college education. The two groups had no significant difference in terms of age, marital status, education, and occupation. Table 1 summarizes the comparison of irrational health beliefs and health locus of control between the two groups of hypertensive and healthy individuals.

A review of Table 1 data shows that there is a statistically significant difference comparing the irrational health belief in two groups of hypertension and healthy individuals ($P < 0.01$). In addition, no statistically significant difference was found in comparing the internal locus of health control ($P > 0.05$) between the two groups of hypertensive and healthy individuals, but a statistically significant difference was observed in the external health locus of control ($P < 0.001$) and in the chance locus of health control ($P < 0.01$).

According to the results of Table 2 with respect to coding for regression analysis (hypertension = 1, healthy controls = 0, and reference variables = 0), there was a significant relationship between the variables of irrational health belief and external health locus of control and hypertension. For a unit increase in an irrational health belief score, the chance of having high blood pressure increases by 6%, and for a unit increase in the score of an external health locus of control, there is a 17% higher chance of having hypertension.

Discussion

The current research was conducted aiming at relationship between hypertension with irrational health belief and health locus of control. The results showed that the mean score of irrational health beliefs in hypertensive individuals was higher than that of healthy ones, which showed a statistically significant difference. In addition, logistic regression analysis also showed that the probability of hypertension increases by 6% per unit increase in an irrational health belief score. Irrational beliefs are baseless negative beliefs

Table 1: Mean, standard deviation, and independent *t*-test results to compare groups regarding irrational health beliefs and health locus of control

Variables	Groups	Mean±SD	<i>t</i>	Significance
Irrational health beliefs	Hypertension group	42.41±16.86	3.25	0.0001
	Healthy group	36.14±9.35		
Internal health locus of control	Hypertension group	26.44±4.08	0.85	0.398
	Healthy group	27.01±5.34		
External health locus of control	Hypertension group	25.58±6.79	4.46	0.0001
	Healthy group	21.89±4.70		
Chance health locus of control	Hypertension group	19.65±7.09	2.16	0.032
	Healthy group	17.79±4.85		

SD=Standard deviation

Table 2: Relationship between variables of irrational health belief and health locus of control with hypertension in the studied samples

Variables	Parameter (B)	SE	P	OR	CI
Irrational health belief	0.61	0.015	0.0001	1.063	1.1-032.095
Internal health locus of control	-0.005	0.040	0.902	0.995	0.1-920.076
External health locus of control	0.163	0.035	0.0001	1.177	0.1-920.261
Chance health locus of control	-0.021	0.029	0.470	0.979	0.1-926.036

CI=Confidence interval, SE=Standard error, OR=Odds ratio

that cause anxiety, tension, and disruption of human balance. Therefore, it can be said that these beliefs are among the important and influential factors in health.^[20] Health-related irrational beliefs make people with hypertension to consider themselves as less likely to be at risk than those around them, and thus have less health-focused behaviors.^[21] These people do not believe in proper exercise and nutrition and believe that these factors do not have any effect on the improvement and prevention of their disease, and that they are more at risk and more likely to suffer from hypertension because they believe that they never get sick under any circumstances. They do not follow the medications prescribed by the physician, and if they use drugs, they would discontinue and irregularly use them as soon as they feel better. In addition, people with irrational health beliefs generally do not believe in prevention, which, in turn, provides the basis for hypertension. Patients who place greater emphasis on irrational health beliefs make health-related decisions that are not based on medical principles and, in turn, undermine health-related adherence. In line with the findings of the present study, a study of the relationship between adherence to antihypertensive drugs and health belief among hypertensive patients showed that the stronger the individual's health belief, the higher their adherence to hypertensive medication.^[8] Another study examining the impact of Health Belief Model-based educational program on physical activity in women at vulnerable to hypertension showed that using a Health Belief Model in an educational program can help patients change behaviors that increase the disease risk.^[9] In general, human performance is influenced by cognitive and emotional tendencies, expectations, beliefs, and values. The key element to exercising personal control and functions is human belief about himself/herself.^[22] Previous knowledge, skills, and achievements of individuals are not appropriate predictors of future performance of individuals; rather, the human's belief about his/her capabilities influences one's performance. People's performance can be easily affected by distrust and self-doubt. Thus, even talented individuals less likely use their abilities when they have

poor beliefs about themselves.^[23] According to Beck, people's emotional responses are consistent with their distorted assessment of what is happening, not what is the reality. When an unpleasant event occurs to a person, the event itself does not make the person anxious, but rather it is the perception of the event that leads to the discomfort.^[24] Today, the role of psychological factors, especially the experience of negative emotions and personality traits, has been clarified in the development of heart disease and hypertension.^[25] Psychological and personality variables influence cardiovascular disease through behavioral pathways, including dysfunction or failure in health-related behaviors.^[26] Overall, these findings indicate that different beliefs of individuals determine their performance with regard to self-care, and these beliefs are rooted in past self-efficacy and positive and negative performance of them; if they have had a positive performance in the past, it can increase self-care performance, and if their performance has had negative consequences, it can reduce the doing things. These studies suggest that psychological factors are involved in the onset, spread, and persistence of heart disease.

Regarding the health locus of control variable, in subscales of external locus of control and the chance, the mean scores of hypertensive individuals were higher than that of the healthy ones, but in the internal locus of control, healthy individuals showed higher mean scores compared to hypertensive individuals. In addition, logistic regression analysis showed that per one unit increase in the score of external locus of control, there is a 17% higher chance of developing hypertension. These findings are consistent with those of previous studies.^[27] The health locus of control is also defined as the belief that one's health is controlled by one's own behavior or by external forces.^[28] One of the dimensions that distinguish individuals is the degree of control they think they have over life events. Some believe that life events are the result of their attitudes and behaviors and that they are the main creators of their lives, and some others believe that these events are controlled by forces outside them those who believe.^[13] Those who believe their efforts can change the affairs have the internal locus of control, and those who see the fate, fortune, or power of others as effective in the affairs of life have the external locus of control.^[29] Research has shown that the internal locus of control is associated with physical and mental health, and the internal locus of control is greater among people who tend to be healthy.^[30] Paying attention to the health locus of control can help reduce disease complications, and lack of internal locus of control is accompanied by lack of medication and poor cooperation in medical treatment that can worsen well-being, complications, and even risk or loss of life.^[31] Studies by Taher *et al.* and Omeje and Nebo on patients with hypertension showed that people

who follow internal health locus of control did not follow the treatment regimen and therefore had high blood pressure.^[32] Therefore, the health locus of control is one of the health indicators for planning health education programs as well as a construct in understanding and predicting health behaviors.^[33] Health workers can also improve personal health beliefs by promotion of health services and ultimately health outcomes.^[31] As the external health locus of health control plays a role in the development of hypertension, educating nurses and managers in health programs can encourage patients to participate in self-care and improve its quality.

Limitations of the present study include nonrandom sampling, lack of motivation in some participants to complete the research instrument, and limited sample size due to the limited number of referrals to health centers. Practically, it is recommended that specialists consider psychological constructs such as the health locus of control and irrational health belief in patients with hypertension. Attempt for changing the behaviors and beliefs related to lifestyle and health locus of control may help prevent and control hypertension through educational and psychological interventions.

Conclusion

In general, it can be deduced from the findings of this study that two variables of irrational health belief and health locus of control can have a significant effect on the incidence of hypertension. Therefore, psychological traits are not only as important as physical and biological traits, but can be more important in many aspects of life, so the interaction of different disciplines such as medicine and psychology in daily life and the treatment of cardiovascular diseases hypertension should be considered. Studying the causes and predictors of hypertension can be very helpful in choosing the most effective treatment modalities, preventing time and cost loss and bringing specialists closer to their goals; on the other hand, by recognizing these hypertension predictors, great steps can be taken to prevent this disease. It is recommended that in addition to medical interventions, psychological interventions be used for both cardiac patients and healthy individuals to prevent cardiovascular disease. On the other hand, researchers suggest that further research should identify other causative constructs of this disease, as well as broader studies should be conducted in different cultures to investigate the role of psychological constructs in this disease.

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Conflicts of interest

There are no conflicts of interest.

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