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A Study on the Predictive Power of the Health Belief Model Constructs in Self-Care Behaviors of Patients with Hypertension

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Abstract

Aim: Hypertension is a chronic and asymptomatic disease leading to death of at least 45% of patients with cardiovascular diseases (CVD_s). Self-care is important to minimize the risks and complications caused by hypertension.

This aim of the present study was to determine the predictive power of constructs of the Health Belief Model (HBM) in self-care behaviors of patients with hypertension.

Methods: This was a descriptive-analytic study of cross-sectional type carried out on 125 patients over 30 years old with hypertension who referred to the rural health centers in Rasht city. Sampling was done in multi-stage form, and the patients were selected randomly. To collect data, a valid and reliable questionnaire containing demographic information and questions of constructs of the HBM and self-care behaviors was used.

Findings: Based on Pearson's correlation analysis, a significant and negative relationship was observed between self-care behaviors and construct of perceived barriers. Also there was a significant and positive relationship between self-care behaviors and the construct of cues to action. Based on linear regression analysis, the HBM could predict 19% of variance of self-care behaviors by two constructs of perceived barriers (B=0.22, SE=0.04, P=0.01) and cues to action (B=0.19, SE=0.06, P=0.02).

Conclusion: According to the predictive power of the HBM and the role of constructs of perceived barriers and cues to action in self-care behaviors of patients with hypertension, it is needed to focus on educational interventions based on this model to reduce the perceived barriers and influencing the cues to action.

Keywords: Health Belief Model (HBM), Hypertension, Self-care

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Introduction

Hypertension is one of the most common chronic diseases and the most important risk factor to cause heart disease and stroke [1, 2]. Out of 17 million deaths annually due to cardiovascular diseases (CVD_s) [3], 9.4 million deaths each year are caused by hypertension complications [4]. Regular monitoring of blood pressure can prevent or delay the common complication of this disease [5] and reduce the death and disability caused by heart diseases [6].

Controlling the hypertension is too important to minimize its likelihood complications. Although preventing and treating hypertension have been focused and some specific solutions have been presented as treatment [7-10] including more than hundred different drugs, the statistic of controlling hypertension is low [11]. Most of studies to treat hypertension have focused on the medical actions. While the drugs have some side effects [12], and self-care behaviors should be focused to promote and maintain the health [13]. The results of a meta-analysis show that self-care interventions are efficient in hypertension so that, in a study, systolic and diastolic pressures were decreased, respectively to 5 and 3.4 mm Hg using self-care behaviors [14]. Obviously, controlling blood pressure needs a certain degree of self-care [15]. Self-care actions are conscious and educated activities done by patient to survive and promote self and family health. Self-care behaviors include regular control of blood pressure, reducing salt intake, not smoking, regular exercise, avoiding stress and psychological pressures, healthy eating, losing weight, and taking medication as prescribed [16]. Training interventions should be used in self-care; these interventions require perception of beliefs and attitudes. Due to complex and real relationship between attitudes, beliefs and health behaviors, models of health education and health promotion are used [17, 8]. The Health Belief Model (HBM) is one of the models used in the fields of health promotion and preventive behaviors such as controlling blood pressure [19]. Accordingly, the patient must have felt threatened against the issue to adopt preventive functions (perceived susceptibility). Then he/she must understand the depth of this risk and serious physical, mental, social and economic complications (perceived severity), receive positive symptoms by surrounding or internal environments (cues to action) to believe the superiority of the proposed models to reduce the risk of hypertension (perceived benefits) and the real or assumed costs of proposed behavior (perceived barriers), and ensure self-ability to learn new behavior (perceived self-efficiency) to do self-care behaviors to prevent hypertension [20].

According to various conducted studies, different results have been obtained on the effect of the above constructs on self-care behaviors [21-26]. For example, in some

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studies, the role of perceived susceptibility and perceived severity [26], or the effect of these two constructs and perceived benefits and cues to action [24] and in others, the role of perceived self-efficacy and perceived barriers [22] or the role of these two constructs, along with cues to action have been highlighted [21]. Therefore, the aim of the present study was to examine the predictive power of the HBM constructs in self-care behaviors of patients with hypertension who referred to the rural health centers in Rasht City, North Iran.

Materials and Methods

This was a descriptive-analytic study of cross-sectional type. The studied population were 125 patients with hypertension who referred to the rural health centers in Rasht City. Sampling was done in multi-stage form. In the first step, a list of rural health centers in Rasht was prepared; then four centers were selected randomly and 125 patients were studied. The study was started after adopting the permission from the Ethics Committee of Guilan University of Medical Sciences under the Code Number IR.GUMS.REC.1394.179, plus coordinating with the health centers and receiving written consent from the participants. The valid and reliable questionnaire by Hazaveei et al. [21] was used to collect data. Because the study was conducted for the first time in this community, the reliability was estimated using 20 patients similar to the studied population. Cronbach's Alpha coefficient for studied constructs was as below: perceived susceptibility 78%, perceived severity 72%, perceived benefits 82%, perceived barriers 76%, perceived self-efficacy 73%, and cues to action 81%. Cronbach's Alpha coefficient for self-care behaviors was 82%.

Data were collected in self-reporting form using an anonymous questionnaire filled by the researcher through interview. The researcher introduced herself to the patients and stated the aim of the research on data. She also assured the patients of confidentiality of information. The subjects participated in the study with prior written consent. The questionnaire consisted of three sections: demographic variables, constructs of the HBM (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, perceived self-efficacy and cues to action,) and self-care behaviors. The scores of each one of the HBM constructs were evaluated based on 3-item Likert scale (*agree*, *no idea*, and *disagree*). Perceived susceptibility, perceived severity, perceived benefits, perceived barriers, perceived self-efficacy and cues to action consisted of 8, 9, 7, 7, 7 and 8 questions, respectively. Self-care behaviors consisted of 9 questions and were answered with *no*, *sometimes* and *always* items. The score range of self-care behaviors questionnaire of blood

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pressure was 0 - 18. After scoring the questions, the self-care behaviors were divided based on the acquired scores into three categories of good (12-18), middle (6-12) and weak (0-6); therefore, higher scores indicated better situation of patient to do self-care behaviors of blood pressure. To examine the average systolic and diastolic blood pressures of the patients, the blood pressure of each patient was measured every 5 minutes and the average of two systolic pressures was considered as systolic pressure and average of two diastolic pressures was considered as diastolic pressure [27]. To analyze data, descriptive statistics and analytical statistic tests including correlation coefficient and linear regression analysis were used using SPSS software (ver. 21).

Findings

Totally, 125 patients with hypertension participated in this study. Age average of the patients was 56.92± 9.34. Average of systolic pressure was 144.7± 13.92 and average of diastolic pressure was 92.7± 9.38. In this study, 81.6% of the participants were women, 83.2% were illiterate or with primary education (58.4% illiterate and 24.8% primary education), 83.2% were housewives, and 84.8% were married. Mean and standard deviation as well as the score range of each variable are shown in Table 1.

Table 1: Mean Standard Deviance and Score Range of the Health Belief Model constructs and Self-Care Behaviors

Variable	Mean	SD	Possible score range
Perceived susceptibility	21.22	1.82	8-24
Perceived severity	22.13	2.46	9-27
Perceived benefits	17.32	2.53	7-21
Perceived barriers	14.51	2.42	7-21
Perceived self-efficacy	10.28	0.97	7-21
Cues to action	15.33	1.96	8-24
Self-care behaviors	10.67	1.45	0-18

Table 2: Matrix of Pearson's correlation coefficient between the Health Belief Model constructs and self-care behaviors in patients with hypertension

Variables	1	2	3	4	5	6	7
Perceived susceptibility	1						
Perceived severity	0.278**	1					
Perceived benefits	0.567*	0.174	1				
Perceived barriers	-0.255*	-0.376**	-0.048	1			
Perceived self-efficacy	0.272**	0.180	0.215*	-0.090	1		
Cues to action	0.007	0.126	0.312**	-0.320*	0.297**	1	
Self-care behaviors	0.144	0.119	0.085	-0.520**	0.172	0.370*	1

P<0.01= **, P<0.05= *

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According to Pearson's correlation coefficient (Table 2), there was a significantly negative correlation between self-care behaviors and perceived barriers (P=0.002) so that doing self-care behaviors increases by decreasing the perceived barriers. Also there was a significantly negative correlation between self-care behaviors and cues to action (P=0.024). Significant negative correlations between cues to action and perceived barriers (P=0.032) and between perceived severity and perceived barriers are considerable (P=0.005)

Table 3: Linear regression analysis of the Health Belief Model constructs as predictors of self-care behaviors in patients with hypertension

Constructs	B	SE	Beta	T	95% CI	P
Perceived susceptibility	0.06	0.07	0.06	0.86	0.10-0.18	0.41
Perceived severity	0.04	0.06	0.06	0.59	0.09-0.15	0.51
Perceived benefits	-0.01	0.08	0.08	-0.26	0.12-0.20	0.65
Perceived barriers	0.22	0.04	0.03	2.55	0.03-0.20	0.01
Perceived self-efficacy	0.05	0.09	0.09	0.60	0.12-0.24	0.47
Cues to action	0.19	0.06	0.06	2.37	0.01-0.26	0.02

According to the linear regression test results, constructs of the HBM (independent variables) have 19% of predictive power of variance of self-care behaviors (dependent variable) by two constructs of perceived barriers in the opposite direction; i.e. self-care behaviors increase by decreasing perceived barriers (B=0.22, SE=0.04, P=0.01) and cues to action (B=0.19, SE=0.06, P=0.02) (Table 3).

Discussion

According to this study, the HBM could predict 19% of variance of self-care behaviors in the patients with hypertension. This finding is consistent to the findings of Skinner et al. and Jalilian et al. in the field of the HBM in predicting the self-care behaviors of non-communicable diseases, with the predictive power of less than 30% [28, 29].

The findings of this study indicated that two constructs of perceived barriers and cues to action are predictive of self-care behaviors. Similar to this study, Hazavehei et al., Robinson et al., Baghianimoghadam et al., Mazlomi et al. and Tan reported a significant inverse relation between perceived barriers and self-care behaviors [21-23, 25, 26]. Based on the opinion of Janz, Champion and Strecher, the strongest predictor of behavior in the HBM is perceived barriers, and reducing it is one of the best programs affecting the self-care behaviors. Often influences on obstacles as perceived barriers are not simply possible [20]. According to the HBM, barriers of health promoting behaviors may be abstract or real. Barriers include the perception related to lack

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of access, lack of suitability, cost, difficultly or time-consuming nature of a specific behavior [30]. Educational interventions should identify the real and assumed barriers and focus on the most important of them in order to reduce the target barriers; it is recommended that people in all real and assumed barriers should have brain-storming and discuss what they can do to overcome the barriers [20].

Given the significant negative correlation between cues to action and perceived barriers in this study, the efficient cues to action for patients to overcome the barriers of self-care behaviors are health workers, physicians, and family support. In other studies, the role of family in self-regulating behaviors of patients with high blood pressure has been approved [31]. Therefore, educational planning for these cues to action could have an effective role in overcoming the barriers. On the other hand, increasing the perceived severity has a significant role in reducing the perceived barriers, and perceived severity has a strong cognitive component related to knowledge, which is important in educational interventions. Increasing the perceived severity through these programs indirectly reduces the perceived barriers [19, 20]. In the studies, the patients suffering from hypertension and its complications try to change the situation and increase self-regulating behaviors [31-33]. Understating the depth and serious complications of this disease can increase the ability of the patient to overcome the barriers [30]. According to our study, statistically significant negative correlation between perceived severity and perceived barriers highlights the effect of perceived severity on educational interventions. Similar to the findings of Bond et al. and Hazavehei et al., the construct of cues to action affects the self-care behaviors in our participants [21, 24]. The study by Barati et al. showed that married patients with high blood pressure have more suitable self-regulating behaviors compared to others, and the researchers noted the role of family as one of the most important resources of social support in this regard [31]. As mentioned above, the efficient cues to action in the present study are health workers, physicians, and family. Therefore, these three groups have effective role in social support, and instrumentally and emotionally encourage promoting self-care behaviors. This point would appear more serious in educational programs when we consider that about 60% of the subjects in this study were illiterate and 25% had primary education.

Limitation of this study was use of self-report; therefore, an anonymous questionnaire was used, and the participants were assured of confidentiality of their information.

Conflict of interest

The authors dectared no conflict of interest.

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Conclusion

In this study, The HBM could predict 19% of variance of self-care behaviors in the patients with hypertension based on the constructs of perceived barriers and cues to action. It is needed to focus on reducing the perceived barriers and regarding the effective cues to action in educational interventions.

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