EFFECT OF SELF-CARE BEHAVIORS EDUCATION ON HYPERTENSIVE PATIENTS IN AHWAZ; BASED ON HEALTH BELIEF MODEL

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ABSTRACT

Hypertension is a leading cause of death in the world, which imposes heavy costs on the economy of global health annually. The present study aimed to analyze the effect of health belief model constructs messages based on self-care behaviors in hypertensive patients. *MATERIALS AND METHODS:* This was an interventional study with case and control group conducted on 110 hypertensive patients who lived in rural areas in Ahwaz in 2014. Data collection tools included demographic information checklist and health belief constructs and self-care behaviors questionnaires. Educational content was confirmed based on pre-test results. Posttest was performed after two months. The collected data was analyzed using SPSS version 16 with descriptive and analytical tests as t-test and chi-square. **RESULTS:** The data analysis showed that mean scores of awareness, perceived susceptibility, perceived severity, perceived benefits and barriers, manual, self-efficacy and preventive behaviors before and after the intervention were significantly different. In other words, education effectively enhanced mean scores of the variables (P-value<0.001). **CONCLUSION:** The present study examined the effect of education on self-care behaviors and model constructs among the

patients. Therefore, awareness and self-efficacy should be increased and self-care behaviors should be encouraged through training sessions and correct planning in order to reduce hypertension.

KEYWORDS: Health Belief Model, self-care, Hypertension

INTRODUCTION

Blood pressure is the pressure exerted by circulating blood upon the walls of blood vessels.[1] Hypertension usually in adults is defined as 140-mmHg or higher than that systolic blood pressure or 90-mmHg or higher than that diastolic blood pressure.[2] Hypertension is one of the leading causes of death in the world, which imposes heavy costs on the economy of global health annually.[3] World Health Organization (WHO) developed a practical plan to prevent and control Non-communicable Diseases (NCDs) from 2013 to 2020, which aimed to relatively reduce prevalence of hypertension up to 25%, which indicates significance of the disease.[4]

The World Health Organization estimates that hypertension causes one death among 8 deaths and is the third leading cause of death in the world.[1] Hypertension is a major health problem in the world,[5] which has affected 6 to 25 percent of adult population in the world.[6] There are a billion people in the world suffering from hypertension and 4 million people die per year as a direct cause of hypertension.[1] Annually 8.4 million people are infected with the disease worldwide.[7] In 2006, 76 million adults in the United States (34% of the population) were hypertensive and over 44% of African-Americans had the highest rates of hypertension. [8] The risk factors for non-communicable diseases in the country were examined in 2009. The results showed that 16 percent of 15 to 64 years old people were hypertensive.[1] The prevalence of hypertension was reported as 17% in Ahwaz City and as 7% in rural areas.[9]

Patients with hypertension are at high risk of cardiovascular disease. An increase of 10 mm Hg (more than normal) in diastolic blood pressure leads to relatively increased risk of stroke and cardiovascular disease up to 37%.[10] Moreover, hypertension may impair vision. The symptoms range from blurred vision to blindness.[1]

Infection with hypertension depends on such non-modifiable risk factors as age, sex and heredity. However, lifestyle changes can prevent development of hypertension.[11] People with hypertension can prevent severity of the disease and prevent those possible diseases

caused by hypertension by taking care of themselves. Self-care refers to learned, conscious and purposeful practices, which people do for themselves, their children and their families to stay healthy and maintain their proper health, both mentally and physically, meet their social and psychological needs, prevent illness or accident. Self-care is not a substitute but a supplement, which determine how to apply professional and organizational care.[12] Limited research has been done on hypertension self-care education. Shojafard *et al.* (2008) examined the effect of education on self-care behaviors, benefits and barriers in patients with heart failure in Tehran. The results indicated that self-care behaviors and perceived benefits of these behaviors in the intervention group increased significantly and barrier to these behaviors significantly decreased.[13] Available studies in Iran and other countries were reviewed. Limited research has been conducted using the health belief model. Based on this model, people should be alarmed (perceived susceptibility) to adaptation of preventive behaviors and practices. Then, people should perceive the depth and seriousness of risk of adverse effects on the physical, social, psychological and economic aspects (perceived severity). Then, people should perceive usefulness and applicability of preventive behaviors program (perceived benefits) in order to believe in positive signs of the surrounding environmental or internal environment (manuals) and find that inhibiting factors of this operation are less expensive than relative benefits (perceived barriers). Finally, people can increase performance of their self-care behaviors. Thus, the present study aimed to examine the effect of health belief model constructs messages based on self-care behaviors in hypertensive patients.

MATERIALS AND METHODS

This was an interventional study with case and control groups. The sample size was determined as 110 based on sample size formula with 20% loss (both gender). The subjects were selected from hypertensive patients (confirmed by physician diagnosis). The subjects were studied since the beginning of November by the end of February in 2014. The license to carry out the educational test was approved and obtained. Two health centers were selected using random cluster sampling method based on coordination with the relevant authorities and the Department of Health Education and Prevention in the Health Center in East Ahwaz. Then, 55 patients were selected from each center using available sampling method. These centers were selected according to geographical region as well as cultural and economic characteristics. Random method, group 1 was selected for case group based on health belief model education and Group 2 was designated as the control group. The subjects in the two

groups were matched based on such variables as gender, employment status, education, marital status, age and duration of hypertension. Inclusion criteria included a desire to participate in the study, between 15 and 60 years old, the least literacy level. History of treatment was not a barrier to participate in the study. Exclusion criteria included possible problems that might have caused problems for education, unwillingness of both patients and their families to continue to participate in the study, failure to attend training classes of blood pressure, failure to attend training classes regularly. Permission was obtained from research assistant of University of Medical Sciences to observe moral considerations. Data collection for this study was a researcher-made questionnaire called "Self-care Questionnaire". The questionnaire consisted of following questions.

1- seven demographic questions

2- Twelve knowledge questions with correct and wrong answers, the scores ranged from 0 to 24 and Cronbach alpha was equal to 0.81

3- Five perceived susceptibility questions with 5-point Likert scale from strongly agree to strongly disagree, the scores ranged from 5 to 25 and Cronbach alpha was equal to 0.86

4- Six perceived severity questions with 5-point Likert scale within the range from strongly agree to strongly disagree, the scores ranged from 6 to 10, Cronbach alpha was equal to 0.93

5- Five perceived barriers questions with 5-point Likert scale ranging from strongly agree to strongly disagree, the scores ranged from 5 to 25 and Cronbach alpha was equal to 0.75

6- Seven perceived benefits questions with 5-point Likert scale ranging from strongly agree to strongly disagree, the scores ranged from 7 to 35 and Cronbach alpha was equal to 0.87

7- Ten self-efficacy questions with 5-point Likert scale ranging from strongly agree to strongly disagree, the scores ranged from 10 to 50 and Cronbach alpha was equal to 0.89

8- Six manuals questions with 5-point Likert scale ranging from strongly agree to strongly disagree, the scores ranged from 6 to 30, Cronbach alpha was equal to 0.94

9- Nine self-care questions with 4-point Likert scale from strongly agree to strongly disagree, the scores ranged from 0 to 27 and Cronbach alpha was equal to 0.72.

It is worth mentioning that responses were recorded as necessary. Content validity of the questionnaire was approved by a panel of experts and face validity of the questionnaire was confirmed through comments of 15 individuals similar to the subjects. It should be noted that these 15 individuals were excluded from the study. Furthermore, Cronbach alpha was

estimated as 0.72. The initial questionnaire was completed for both groups after those subjects attended the health centers and the research objectives were explained to them. The educational content was prepared based on pretest analysis. In accordance with the health belief model constructs, two training sessions were performed on a weekly basis for an hour through discussion group, lecture, so using printed materials with theological education via mobile phone in the intervention group. It should be noted that none of the group members contacted each other during these two months. After collecting anonymous questionnaire data, the data was entered into SPSS (version 16). The collected data was analyzed using descriptive tables and such statistical tests as ANOVA, paired t-test and chi-square.

RESULTS

The results showed that 32.7% of the subjects were males while 67.3% were females. The chi-square test also showed no significant difference between the case and control groups. The results are presented in Table 1. There was also no statistically significant difference between such underlying diseases as diabetes, hyperlipidemia, stroke, kidney problems and a familial history of hypertension in both case and control groups.

Table 2 shows mean and standard deviation of scores of model constructs in the case and control groups before and after intervention, the results showed that scores of different constructs in the case group increased after the intervention while no increase was observed in the control group.

Mann-Whitney and Wilcoxon non-parametric test results showed no statistical significant difference between the case and control groups at pretest (p = 0.46). No significant difference was observed between the case and control groups at posttest; however, the changes were significant (p = 0.006). There was a significant difference between pretest and post-test in the case group. There was no difference between pre-test and post-test in the control group.

In order to compare mean scores of the case group and control group before and after the intervention, two-independent t-test and paired t-test were used for all constructs. The results showed no statistically significant difference between the constructs in the case and control groups before the intervention.

There was no significant difference in perceived susceptibility construct at pretest between the case and control groups (p=0.059). There was no significant difference at posttest

between the experimental and control groups (0.001). There was a significant difference between pretest and posttest in the experimental group. There was no difference between the pre-test and post-test in the control group. The t-test results showed statistically significant differences were between the intervention and control groups after the intervention. Educational program increased perceived susceptibility of complications of hypertension in the intervention group.

There was no significant difference in perceived severity construct at pretest between the case and control groups. There was a significant difference at posttest between the case and control groups. There was a significant difference between pretest and posttest in the case group. There was no significant difference between pretest and posttest in the control group. Educational program increased perceived severity of complications of hypertension in the intervention group.

There was no significant difference in perceived barriers construct at pretest between the case and control groups. There was a significant difference at posttest between the case and control groups. There was a significant difference between pretest and posttest in the case group. There was no significant difference between pretest and posttest in the control group. Educational program decreased the perceived barriers to not conducting self-care practices in the case group.

There was no significant difference between perceived benefits construct at pretest between the case and control groups (P = 0.051). There was a significant difference at posttest between the two groups (P = 0.001). Educational program increased the perceived benefits of complications of hypertension in the case group.

There was no significant difference in self-efficacy construct at pretest between the two groups (P = 0.397). There was a significant difference between pretest and posttest in the case group. There was no significant difference between pretest and posttest in the case group in the control group. Educational program increased self-efficacy to conduct hypertension self-care in the case group.

There was no significant difference between the case and control groups at pretest in manual construct (P = 0.412). There was a significant difference at posttest between the two groups (P = 0.001). There was a significant difference between pretest and posttest in the case group.

There was no significant difference between pretest and posttest in the control group. Educational program increased manuals to conduct hypertension self-care in the case group. There was no significant difference between pretest and posttest in self-care behaviors (P = 0.165). There was a significant difference at posttest between the two groups (P = 0.001). There was a significant difference between pretest and posttest in the case group. There was no significant difference between pretest and posttest in the control group. Educational program increased hypertension self-care behaviors in the case group.

Discussion and Conclusion

The findings showed that mean score of knowledge increased after intervention in the case group while no significant change was observed in control group after training.

This is due to the effect of education, involvement and participation of patients in the training class. Numerous studies showed the effect of preplanned education based on health belief model in increasing knowledge after intervention (14-16).

In the present study, perceived susceptibility and perceived severity scores had statistically significant difference after the intervention compared to before intervention. The susceptibility and perceived severity scores increased after intervention in those studies conducted by Shojafard *et al.*,[13] Helz *et al.*[17] and Bowry *et al.*[18] However, these scores decreased in the control group. The results showed the effectiveness of training program on self-care behaviors.

In this study, self-care behaviors scores had significant difference at posttest compared to pretest in the case group. In other words, the subjects showed more self-care behaviors after intervention. In the control group, the difference was not significant. Shojafard *et al.*[13] showed that the majority of people rarely or never showed self-care behavior before the intervention in 2008. The results were consistent with those obtained in the present study. Thus, it looks like that educational content of this study is recommended in self-care behaviors. These strategies can be effective in improving self-care behaviors.

Learning self-care behaviors can bring individual health and welfare, improve individual adaptation to the health and welfare, increase individual compatibility with the disease, increase self-care ability and decrease disability of the patients and reduce health care costs.[19-21]

The study showed a significant difference in self-efficacy scores at posttest compared to pretest in the case group. In the control group, the difference was not significant. These results are in line with those obtained by Charlson *et al.*[22] It seems that those individuals with low self-efficacy immediately lose their self-confidence in dealing with problems and barriers; however, those individuals with high self-efficacy may have high self-management. Thus, increasing self-efficacy can lead to self-management and high self-care behaviors in hypertensive patients.

Since self-care behaviors are considerably important in hypertensive patients, intervention efforts are important and necessary to promote these behaviors in the patients to control the disease and prevent its complications and early mortality. It is recommended and emphasized that promoting self-care behavior and ultimately controlling the disease and using training program designed and applied in this study be considered as manuals for hypertensive patients. Therefore, educational content of this study can be used for experts and planners in the health centers considering the effect of self-care behaviors on patients.

Table 1. Demographic characteristics of the subjects

Variable	Status	Intervention		Control	
		Number	**Percentage**	**Number**	**Percentage**
Gender	Male	19	17.3	36	32.7
	Female	17	15.5	38	34.5
Age	Below 30 years old	1	0.9	2	1.8
	30-35	1	0.9	3	2.7
	36-41	3	2.7	2	1.8
	42-48	4	3.6	4	3.6
	Above 48 years old	46	41.8	44	40
Education	Illiterate	22	20	25	22.7
	Secondary school	10	9.1	8	7.3
	Diploma	16	14.5	14	12.7
	Academic	7	6.4	8	7.3
Occupation	Laborer	1	0.9	2	1.8
	Employee	3	2.7	7	6.4
	Housekeeper	33	303	32	29.1
Marital status	Married	40	36.4	46	41.8
	Single	5	4.5	1	0.9
	Spouse	10	9.1	8	7.3

Table 2: Mean and standard deviation of the experimental and control groups before and after intervention

Variable	Intervention group	Control group	Intervention group	Control group	The tests used
	Before intervention		**After intervention**		
	Mean and standard deviation				
Awareness	18.83±1.63	18.78±2.40	20.21±2.83	18.81±2.34	
Wilcoxon	0.006		0.456		
Perceived susceptibility	23.07±2.31	21.94±3.5	24.52±1.15	22.01±3.46	t-test before intervention: 0.059 after intervention: 0.001
Paired t-test	0.001		0.322		
Perceived severity	27.52±3.21	26.20±4.5	29.30±1.75	22.14±4.47	t-test before intervention: 0.078 after intervention: 0.001
Paired t-test	0.001		0.322		
Perceived barriers	18.03±3.3	14.83±4.44	14.54±3.91	14.8±4.45	t-test before intervention: 0.716 after intervention: 0.001
Paired t-test	0.001		0.322		
Self-efficacy	40.76±76	39.74±5.76	45.58±3.94	39.83±5.62	t-test before intervention: 0.397 after intervention: 0.001
Paired t-test	0.001		0.322		
Manuals	27.50±3.3	27.20±3.17	29.18±1.68	27±3.17	t-test before intervention: 0.412 after intervention: 0.001
Paired t-test	0.001		0.451		
Self-care behaviors	20.72±2.94	19.83±3.69	22.72±1.75	19.80±3.66	t-test before intervention: 0.165 after intervention: 0.001
Paired t-test	0.001		0.412		

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