

Investigating the effect of intervention based on preplanned behavior theory on enhancing self-care behavior of patients with hypertension visiting rural health-care systems of Rasht in 2014-2015

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Introduction:

Cardiovascular diseases contribute to a significant percent of mortalities in the entire world and are the most important causes of mortality in the United States (1). Hypertension is considered as one of the most important adjustable risk factors among cardiovascular patients (2-3) with a higher prevalence by duration and age (4). Also, it is one of the general health related problems in all over the world (5). Hypertension is defined as a 140mmHg and higher systolic and 90mmHg and higher diastolic blood pressure (6). The global prevalence rate of hypertension was reported as 26.4% in 2000 and it is estimated that about 1.54 trillion adults will suffer from this disease by 2025 (7). The control and treatment of hypertension is one of the essential issues for both physicians and patients (8). Regular control of hypertension prevents from its common side effects or postpones them (9). Also, it can decrease mortalities and disabilities due to heart diseases (10-11) such that in-time diagnosis and treatment of this disease can reduce 45% of heart-disease-related mortalities and 58% of cerebro-vascular-related mortalities (12).

Despite of profound attention to hypertension prevention and treatment, the reported levels of controlled blood pressure are still disappointing such that the success rate of blood pressure control program in USA was only 27%. This rate was even lower in Britain, France and Germany (13). Statistics show that a high percent of hypertensive patients in Iran are not aware of their disease and even diagnosed patients

do not have sufficient and proper control on their disease (14). This disease requires a lifetime self-care behaviors (15). Self-care is an individual and self-initiated health maintenance, prevention and disease treatment decisions (16) which, for hypertension, include regular control of blood pressure, decreasing salt consumption, non-smoking, exercising, avoiding from mental and psychological pressures, healthy diet, weight loss, and regular consumption of prescription medications by doctors. As, extensive studies have shown that hypertension is a functional result of parameters such as smoking, high salt consumption, insufficient physical activity, stress, obesity and high consumption of saturated fats (17). Also, adjustable risk factors play more important roles in this disease compared to nonadjustable risk factors like family history, age, gender and race (3).

American Heart Association has reported training healthy lifestyle as a fundamental issue in preventing from this disease (3). On the other side, the most effective training programs are based on fundamental theory approaches which stems in changing behavioral patterns.

Theory of planned behavior (TPB) is one of the social cognitive models of changing behaviors (18-19). This theory was proposed first by Ajzen and Fishbein and states that individual intention is the most important determinant of a behavior which is influenced by three constructs: attitude, subjective norms and perceived behavioral control (20-21) and its influences on preventing from behaviors related to some

non-communicable diseases has been proved in different studies including training healthy behaviors (22).

Therefore, this study aimed at identifying the effects of theory-of planned-behavior-based interventions on improving self-care behaviors among hypertensive patients in Rasht city. If its positive effects were confirmed, this theory can be used in training programs at different levels of preventing hypertension.

Research method:

This study was a semi-experimental and clinical trial one that has been registered with IRCT201600116222984N1 code.

The sample size of this study was selected by sample size formula based on the average of two independent groups considering obtained amounts in similar equations for two groups (n=75) that had been simply randomly selected through a quota method from a subject population of hypertensive patients referred to each two rural-urban health centers number 13 and 14.

Inclusion criteria were getting informed consent to participate in the study (all patients were ensured about the privacy of information in advance), having hypertension, taking hypertension medications for at least one year and having a health file in related health center. All patients could quit the study whenever they wanted. Also, any kind of comorbidity and absence from more than one session in training sessions were excluding criteria.

Research instrument, a questionnaire provided by the researcher was used with

multiple parts including demographic questions such as age, gender, profession, marital status, education level, smoking history, and high blood pressure, etc. The second part of questionnaire was about physical activities that were measured through a valid GPAC questionnaire (Global Physical Activity Questionnaire) with 16 questions and also questions about patients' nutritional information that were measured through a FFQ questionnaire (Food Frequency Questionnaire). The next part was about theory of planned behavior in five dimensions namely attitude (4 questions), subjective norms (5 questions), perceived behavioral control (3 questions), behavioral intention (4 question) related to hypertension. A five point Likert scale (strongly agree, agree, do not know, disagree, strongly disagree) was used for theoretical questions and the scores ranged from 4 to 20. Subjective norm construct had 5 questions each with 5 points (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree) with scores ranged from 5 to 25. Perceived behavioral control had 3 questions two with (strongly agree, agree, neither agree nor disagree, disagree, strongly disagree) points and scores ranged from 2 to 10 and the third question with 5 points (completely true, fairly true, do not know, not true, not true at all) with scores ranged from 3 to 15 and one question with (always, most often, hail times, sometimes, never) with 1-5 score range. The highest score for each of these constructs indicates the best personal performance.

Questions related to theory of planned behavior's parameters were designed

according to Ajzen and Fishbein's guidelines and were given to 10 professors in related disciplines in the Guilan University of Medical Sciences that a 90% CVR and a 94% CVI were obtained. To obtain reliability, a pilot study was conducted on 20 referred hypertensive patients and a 0.71 Chronbach alpha was obtained. The questionnaires were completed before and 2.5 months after intervention by two groups. Patients' blood pressure was controlled before and after the intervention training through a handy barometer AIPK-2 by the researcher. Before initiating training sessions, educational contents were provided according to the results of pretest analyses and determined predictive constructs namely perceived behavioral control and attitudes towards behavior constructs. Then, three 45-minutes to one-hour sessions were held for training programs in health center's waiting rooms.

During the first session, some information was provided about current study and also the results of pretests were presented to prepare patients for active participation in the study. In addition, educational pamphlets and PowerPoint presentations were used with more focus on perceived behavioral control and attitudes towards behavior constructs. Further, related information about disease definition, its symptoms and its related risk factors such as age, family history, being overweight and etc. with a focus on accurately performing physicians and healthcare personnel' prescriptions and doing routine cares and drug consumption.

In the second session, with a speech method, group participation and free discussions and

also brainstorming technique focused on perceived behavioral control construct were used for the purpose of dividing self-care behaviors to smaller behavioral goals. Then, considering previous mental awareness provided by subjects presented in the past session, necessary explanations were presented about the significance of mobility in patients and physical activities with a focus on GPAC questionnaire, doing allowable exercises such as isometric exercises, walking, slow running and biking, the significance of regular weight-checking, preventing from obesity and also recording blood pressure level.

In the last session, PowerPoint presentation, pamphlets and educational posters were provided about appropriate use of food groups for hypertensive patients through DASH diet (Dietary Approaches to Stop Hypertension). Also, the number of required portions for this diet from 8 food groups with more focus on creating good attitude with positive consequences of using DASH diet was trained and group discussion and brainstorming were used for the purpose of reinforcing behavioral intention and self-care behaviors. During this session patients were promised try to do desired behaviors.

It should be noted that projector, laptop, informative PowerPoint presentation, whiteboard and whiteboard marker, pamphlet and educational CDs were used as well. It is obvious that there was no training intervention for control group. Questionnaires were distributed again 2.5 months after interventions between two groups and gathered data and information were analyzed with SPSS-18 software and

descriptive and inferential tests were conducted to determine the significance level ($p < 0.05$).

Results:

The results of demographic data showed that mean age of participants was 56.08 years old

and the majority of subjects were married female housewives and one-third of them regularly referred to control their weight and the majority of subjects took their blood pressure pills. In contrast, most of them had no relaxation exercises to reduce their stress level.

Table 1: demographic data for two control and intervention groups

Demographic data		Intervention group	Control group	P-value
gender	Male	73.3	78.7	0.44
	Female	26.7	21.3	
age		56.1	58.1	0.75
Education level	illiterate	73.3	61.3	0.26
	primary education	21.3	34.7	
	high school degree	1.7	0.4	
	university degree	0	0	
profession	Housewife	73.3	0.57	0.05
	Farmer	0.8	0.11	
	worker	10.7	0.7	
Marital status		81.3	86.7	0.37
Weight control by patients		0.28	0.26	0.49
Smoking status		6.7	0.4	0.46

The results of post-intervention tests showed that there was a significant difference with regards to overall physical activity, working time physical activity and physical activity while sitting down for intervention group and this difference was not statistically significant with regards to leisure time physical activity and movement and traveling. The test results 2.5 months after training intervention with DASH food diet showed that the use of low fat dairy

products, unsaturated fats and oils, breads and grains, meat, fruits, cereals and nuts were significantly increased. It should be noted that despite of increasing meat eaten, its use was still in the normal range of DASH diet program. In control group, the use of dairy and fat food groups and sweet foods were significantly increased and the use of vegetables was significantly decreased compared to the beginning of the study.

Table 2: mean value, standard deviation and significance level of attitude construct, theory of planned behavior for two control and intervention groups before and 2.5 months after intervention

group \ time	Before intervention		After intervention		P-value
	mean	Standard deviation	mean	Standard deviation	
intervention	4.51	0.459	4.58	0.361	0.030 Wilcoxon
control	4.37	0.447	4.36	0.419	0.607 Wilcoxon
P-value	0.049 Man withny U		0.001 Man withny U		

Table 3: mean value, standard deviation and significance level of subjective norm construct, theory of planned behavior for two control and intervention groups before and 2.5 months after intervention

group \ time	Before intervention		After intervention		P-value
	mean	Standard deviation	mean	Standard deviation	
intervention	4.16	1.13	4.19	0.606	0.001 Wilcoxon
control	3.96	0.589	3.93	0.570	0.381 Wilcoxon
P-value	0.10 Man withny U		0.005 Man withny U		

Table 4: mean value, standard deviation and significance level of perceived behavioral control construct in theory of planned behavior for two control and intervention groups before and 2.5 months after intervention

group \ time	Before intervention		After intervention		P-value
	mean	Standard deviation	mean	Standard deviation	
intervention	3.64	0.857	4.23	0.517	0.001 Wilcoxon
control	4.08	0.636	3.93	0.603	0.052 Wilcoxon
P-value	0.08 Man withny U		0.003 Man withny U		

Table 5: mean value, standard deviation and significance level of behavioral intention construct in theory of planned behavior for two control and intervention groups before and 2.5 months after intervention

group \ time	Before intervention		After intervention		P-value
	mean	Standard deviation	mean	Standard deviation	
intervention	3.88	0.743	4.27	0.526	0.001 Wilcoxon
control	4.15	0.679	4.13	0.524	0.506 Wilcoxon
P-value	0.06 Man withny U		0.001 Man withny U		

The statistical test results of post intervention training showed a significant statistical difference between control and intervention groups ($p < 0.05$) for all constructs of theory of planned behavior.

Table 6: mean value, standard deviation and significance level of MAP (sum of two diastoles+ one diastole divided by three) blood pressure for two control and intervention groups before and 2.5 months after intervention

group \ time	Before intervention		After intervention		P-value
	mean	Standard deviation	mean	Standard deviation	
intervention	211.08	22.08	201.57	18.93	0.001 Wilcoxon
control	200.13	18.76	201.57	17.46	0.599 Wilcoxon
P-value	0.48 Man withny U		0.04 Man withny U		

Considering that the object of researcher during this study was the evaluation of the results of self-care behaviors in controlling blood pressure, the researcher herself measured patients' blood pressure with a handy barometer. The results showed that there was no significant difference between two groups while there was a significant difference for intervention group after training intervention which indicated the effect if education on intervention group whiles this trend was not observed for control group.

Discussion:

This study was conducted based on theory of planned behavior and training intervention based on this theory's parameters and primary evaluations of hypertensive patients referred to health centers in Rasht city. At the end of this study, the effects of training intervention based on this theory on improving self-care behaviors were observed accordingly. The results showed that the trainings led to increase in mean scores of attitudes from 4.51 to 4.58 in the intervention group which was consistent with Sharifirad et al. (2011)'s study on the fast food consumption behaviors among students (23) and also the results of Zhang et al. (2009) (24) and Pakpour Hajiagha et al. (2012) (18).

Also, mean scores of subjective norm construct were significantly increased in intervention group and changed from 4.16 to 4.19 while control group did not show such trend. These results was consistent with Sharifirad et al (2009)'s study as they showed the effect of training in significant change of abstract norms in the intervention group while these findings were inconsistent with Ahmadi Tabatabaei et al. (2010)'s study (26) as they found a significant decrease of subjective norms after interventions.

The mean value of third construct i.e. perceived behavioral control as the predictive construct of behavioral intention in this study was obtained with regression analysis and increased from 3.64 to 4.23 which was statistically significant while this result was not observed in control group as the mean score of them decreased from 4.08

to 3.93 that was not statistically significant. Therefore, it is expected that the behavioral intention and doing self-care behaviors increase after reinforcing this construct in the intervention group. In this regards, this study was consistent with Hosseini et al (27) and Aghamollaei et al. (2011) (28).

The mean value of behavioral intention construct that leads actual behavior to occur reached from 3.88 to 4.27 in this study which was statistically significant. This finding is consistent with the results of Bsharian et al (29) and Parrot et al. (2008) (30) as they fund a significant increase in students' behavioral intention. All in all, our results indicate the influences of training intervention on behavioral intention.

Conclusion:

The aim of this study was to improve self-care behaviors in hypertensive patients. For these purpose, smaller behavioral goals like physical activity, using DASH diet and correct use of hypertension drugs were used. The results showed that the use of training interventions on theory of planned behavior constructs can help people to adopt and to perform self-care behaviors. Of course, the cultural and social circumstances of people should be considered such that these finding could be extended for other groups.

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