

Changes in the body weight and subsequent physical activity of hypertensive patients using BASNEF model

Rahim Baghaee,¹ Neda Khalediyan^{2*} and Alireza Didarloo³

¹Associate Professor, Department of Nursing Medical Surgical, School of Nursing and Midwifery, Urmia University of Medical Sciences, Urmia, Iran

²Master Nursing Education, School of Nursing and Midwifery, Urmia University of Medical Sciences, Urmia, Iran

³Associate Professor, Department of Health, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran

ABSTRACT

Hypertension is a major public health issue. Lack of medication adherence in patients with hypertension can lead to adverse outcomes. Therefore, patients need to be educated on how to control their blood pressure and increase their behavioral preventive skills. Among the numerous models of health education, BASNEF model is the most comprehensive model used to study, identify and create new behaviors. This study aimed to determine the effect of an educational intervention based on BASNEF model on the medication adherence in patients with hypertension. This quasi-experimental study with pretest-posttest design conducted on 80 patients with hypertension referred to Health Centers in Urmia, Iran, and met the eligibility criteria. They were selected using convenience sampling method and then, randomly assigned to two groups as control and experimental. A 4-part questionnaire was used for collecting the data. The collected data was analyzed by SPSS v.16 software using descriptive and inferential statistics (independent t-test, Mann-Whitney U test and Chi-square test). The results showed that the mean score of medication adherence in patients with hypertension for a fundamental change in hypertension risk factors such as body weight and subsequently physical activity in the experimental group was significantly more than the control group ($P < 0.001$). It seems that educational intervention based on BASNEF model has considerable advantages for a fundamental change in hypertension risk factors such as body weight and subsequently physical activity and increases the medication adherence in patients with hypertension significantly. Therefore, it is recommended to apply this educational model as a key complementary factor to increase compliance of patients with hypertension.

KEY WORDS: HYPERTENSION, SMOKING, BODY WEIGHT, BASNEF, PHYSICAL ACTIVITY

ARTICLE INFORMATION:

*Corresponding Author: Urmia. neda.khaled22@gmail.com

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INTRODUCTION

Hypertension is an increase in systolic blood pressure over 140 mmHg systolic or 90 mm Hg diastolic (Kasper, Braunwald, Fauci, Longo, & Jameson, 2005) and is one of the factors to increase the incidence of mortality in developing countries and in developed countries. According to WHO reports, in 2013, 12 % of all deaths globally are attributed to hypertension and because of the importance of this disease was the motto of 2013 in the World Health Organization “be serious about hypertension” (Organization, 2013). According to 2014 World Health Organization, the prevalence of hypertension in people over 18 years was 22% (Organization, 2014). In 2008, in Iran prevalence of hypertension in persons aged 64-25 was about 25 % (Esteghamati et al., 2008, Ghembaza et al., 2014).

The impact of non-pharmaceutical treatments include reducing salt in the diet, get the weight loss, increase the physical activity, lack of alcohol consumption for reducing hypertension has been approved) (Okwuonu, Ojimadu, Okaka, & Akemokwe, 2014). In a study conducted in Iran shown that only 40 % of patients generally obey the medicinal diet for controlling hypertension (Hadi, Rostamigooran, & Jafari, 2005) and in America also specified that 30-60% of the patients with hypertension do not obey the prescribed medicinal regimen (Chobanian et al., 2003). Adherence of treatment is defined by the World Health Organization: the extent which a person takes medicine and follows his diet or exercise and changes its lifestyle (Ghembaza, Senoussaoui, Kendouci Tani, & Meguenni, 2014). Non-adherence of treatment also is defined as “the failure to obey the recommendations of health behavior or treat” (Masror Roudsari, Dabiri Golchin, & Haghani, 2013). Difficulty and complexity of the treatment regimen is a factor related to treatment is considered as a possible reason for low adherence to treatment. Repeat the dose, the number of drugs that must be taken and the change in antihypertensive medications are a number of factors that are involved in a difficult regimen (Okwuonu, Ojimadu, Okaka, & Akemokwe, 2014 and Ghajari, Ghaderi, Valizadeh, Shakerinezhad, & Haghhighizadeh, 2016).

In BASNEF model, unlike the behavior intention model, the intention necessarily will not lead to behavior, but enabling factors such as money, skill, precision and facilities are between intention and behavior and in the planning of this model should evaluate all enabling factors on behavior (Didarloo A, 2013). Regarding the mentioned issues, the authors decided to examine the effect of education based on BASNEF to treatment in patients with hypertension admitted to health centers of Urmia University of Medical Sciences in 2015.

MATERIAL AND METHODS

In this experimental study, sample of study was obtained among patients with hypertension referred to Health Centers in Urmia, Iran. Using a list of patients referred to the centers, based on quota random sampling and lottery, 80 patients with hypertension were selected and randomly divided into control and intervention groups. The quota of health centers were included 40 patients from the Tarzeloo health center, 20 patients from the 17 Shahryar health center and 20 patients from the Shohada health center.

Informed consent was obtained from all participants. Inclusion criteria included having a higher blood pressure and equal to 140/90 mm Hg, 35-65 years of age, the ability to read and write in the patient or one of his family members and a willingness to participate in the study and the exclusion criteria included three sessions or more absence from training sessions, the patient's unwillingness to support the continuation of the study, the patient's hospitalization in the hospital and patient's death. The data collection instrument was a questionnaire that is designed according to the BASNEF model and its reliability and validity were approved it. The questionnaire included demographic information about the opinion survey, questions related to the disease, BASNEF model included four questions related to section behavior, attitude, subjective norms and enabling factors and Hill-Ben questionnaire for hypertensive patients' diet follow-up. Cronbach's Alpha of discussed structures was determined as follows:

Questionnaire Dimension	Cronbach's Alpha
Knowledge	0.81
Attitude	0.96
Subjective Norms	0.93
Enabling factors	0.84
Intention to behavior	0.93
Adherence	0.90

Educational intervention based on BASNEF was done only in the intervention group. Educational methods were as lectures, distribution of educational package and group discussion conducted on 6 session which each one of them last 90 minutes. During the first, second and third session to influence the attitude of the patients, topics included: an overview of hypertension and its complications, the effect of disease on the interpersonal relationship, the cost of treating the complications, the effects of healthy diet among hypertensive patients and the effect of physical activity to decrease hypertension. In the fourth session, the participation of patients in team therapy and family were taught to impact on the

dimensions of subjective norms. In the fifth and sixth sessions, the use of low facilities, increase the skill and precision in the control of disease, adherence of treatment and follow up in order to affect the enabling factors were taught. As well as, educational pamphlet about control of diseases were distributed in order to affect the intention to behavior aspect.

In the present study, three-month follow-up was considered to examine the impact of the training based on BASNEF model. Finally, after the completion of the period of follow-up, the intervention group and the control answered the questionnaire again and the results of the impact of educational based on BASNEF model was analyzed.

Independent and paired t-test-test and Chi-square statistics were used for the analysis of the data using the software SPSS version 16. The limitations of the study include the lack of cooperation of the relevant authorities and personnel, the lack of educational sessions and the existence of multilingual individuals in

the city of Urmia. The necessary permissions from the research and ethics committees and the relevant authorities was acquired from Urmia University of medical sciences (Rec.IR.UMSU.1394.246). Researcher undertaken that any confidential specifications will not be inserted in the article.

RESULTS AND DISCUSSION

Gender, marital status, education level, employment status, economic status, history of hypertension, history of other diseases and sources of information between the two groups had no significant difference ($P>0.05$) (Table 1).

There is a significant difference between the two groups after the intervention in terms of the treatment of hypertension and physical activity ($P<0.05$). Half of the patients before the intervention had no physical activity, but after intervention, physical activity increased in the intervention group than the control group. Also all

Table 1. The demographic information of patients in both intervention and control groups of subjects

Variable		Control Group		Intervention Group		P- Value
		Frequency	Percent	Frequency	Percent	
Gender	Male	8	20	8	20	P=0.999
	Female	32	80	32	80	
Marital Status	Single	0	0	1	2.5	P=0.580
	Married	34	85	34	85	
	Widow/Divorced	6	15	5	5/12	
Educational Level	Illiterate	24	60	21	52.5	P=0.791
	Elementary	9	22.5	9	22.5	
	Diploma	3	7.5	5	12.5	
	College	0	0	1	2.5	
Occupation Status	Employee	0	0	2	5	P=0.534
	Self-Employed	4	10	2	5	
	Unemployed	3	7.5	4	10	
	Household	31	77.5	31	77.5	
	Retired	2	5	1	5/2	
Economic Status	Enough	3	7.5	4	10	P=0.784
	Somewhat Enough	24	60	21	52.5	
	Not Enough	13	32.5	15	37.5	
Hypertension History	Yes	20	50	29	72.5	P=0.066
	No	20	50	11	27.5	

Variable		Control Group		Intervention Group		P- Value
		Frequency	Percent	Frequency	Percent	
Gender Marital Status	1-3 times per week	14	35	11	27.5	P=0.278
	3-5 times per week	6	15	4	10	
	5-7 times per week	0	0	3	7.5	
	None of them	20	50	22	55	
Educational Level	1-3 times per week	10	25	14	35	P=0.009
	3-5 times per week	3	7.5	8	20	
	5-7 times per week	1	2.5	6	15	
	None of them	26	65	12	30	
Occupation Status	15 minute	0	0	6	31.6	P=0.015
	30 minute	16	80	12	63.2	
	60 minute	4	20	1	5.3	
	90 minute	0	0	0	0	
Economic Status	15 minute	1	7.7	1	3.6	P=0.007
	30 minute	12	92.5	11	39.3	
	60 minute	0	0	15	53.6	
	90 minute	0	0	1	3.6	

aspects of the treatment of patients were observed after treatment, including medication, nutrition and exercise (Table 2).

Independent t-test showed that there was no significant statistical difference between the number of family members and the body mass index before the intervention ($P = 0.225$), but there was significant statistical difference after intervention between the body mass index between the two groups, ($P = 0.019$ (table 3).

High blood pressure is a major risk factor for development of cardiovascular disease (Vrijens, Vincze, Kristanto, Urquhart, & Burnier, 2008). The purpose of this study was to determine the effect of education based on BASNEF to treatment in patients with hypertension admitted to health centers of Urmia University of Medical Sciences in 2015. In both groups, women formed the majority of participants, that it's more important for

women to refer the health centers. In the study of Rahaii et al., in 2012, with the title "predictors of self-monitoring of blood pressure based on the BASNEF in patients with hypertension" (Rahaii et al., 2012) and in the study of Naimii et al., in 2009 with the title "Knowledge and Performance in Patients with high blood pressure "the greatest of them were women (Naiimi, Malekzade, Hadinia, Sharifi, & Mosavizade, 2008). The average age of patients was 54.40 ± 10.85 years which is consistent with the study of Izadirad et al., in 2012 (Izadirad, Masoodi, & zareban, 2013).

Most subjects were married which is consistent with the study of Hadi et al., in 2005 (Hadi, Rostamigooran, & Jafari, 2005). Most of the patients were illiterate and only 2.5% were college educated people. In the study of Naimii et al, more samples were illiterate (Naiimi, Malekzade, Hadinia, Sharifi, & Mosavizade, 2008). According

Variable	Control group	intervention group	P- value
	Mean \pm SD	Mean \pm SD	
MBI after intervention	31.27 \pm 5.14	30.24 \pm 4.37	P=0.225
MBI before intervention	23.15 \pm 5.44	92.68 \pm 4.37	P=0.019

to the results, most of the study subjects were housewives which is consistent with the study of Safai et al., in 2016 (M safaie sarnaghi, Hemmati Maslak Pak, Khademvatan, & Alinejhad, 2016). Most patients had moderate economic status which is consistent with the study of Rahaii et al., in 2012 (Rahaii et al., 2012). According to the results, the most of family had a history of hypertension. In the study of Jafarivarjoshani et al., with the title 'impact of consultation = on the amount of blood pressure in women with hypertension', approximately half of the participants had a history of hypertension (Jafarivarjoshani, Anooshe, Ahmadi, & Namadian, 2004).

According to the obtained results of the intervention and control groups in terms of the underlying variables, there were no statistically significant differences and were homogeneous. So the difference is meaningful in the dependent variable after the intervention because of the positive impact of the educational program based on BASNEF model.

Regarding to the exercise, scores increased after the intervention. Time of physical activity in the intervention group significantly increased after intervention. Chan et al., in 2009 found in their research that training leads to more effective obedience in terms of activity and exercise in patients (Chan, Lonsdale, Ho, Yung, & Chan, 2009). The findings of the study of Hung et al., in 2014, was consistent with our study (Hung et al., 2014).

CONCLUSION

Education is one of the most effective ways to treat highly effective. It also requires training models for the correct way of doing that. This study utilizes BASNEF to educate patients and increase compliance with treatment and help them improve their life. Hopefully, nurses and health providers apply the results of this study to improve the health of patients and their treatment process.

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