



Self-Care Behavior Predictors in Patients with High Blood Pressure Admitted to Comprehensive Health Services Centers of Bastak City Based on BASNEF Model

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DOI: 10.5455/jrmds.2018622

ABSTRACT

High blood pressure is one of the most important health problems. Self-care is an effective method to control this disease. The objective of the current research was to determine self-care behavior predictors in patients with high blood pressure admitted to Bastak city health centers based on the BASNEF model. This research is cross-sectional type of descriptive-analytical study. The research sample included 180 patients with high blood pressure admitted to Bastak city health centers. They were randomly selected through multi-stage sampling method. Data were collected using a questionnaire including three sections of demographic information, knowledge, and questionnaire based on BASNEF questions. The collected data were analyzed using SPSS18 software and descriptive statistics of frequency, relative frequency, mean, and standard deviation, and analytical statistics of logistic regression, linear regression, Pearson correlation, and Chi-square. The mean age of the research samples was 50.62 ± 7.549 . Based on the findings, the constructs of attitude ($p = 0.001$) and empowering factors played significant role in predicting self-care behaviors ($p < 0.001$). With an emphasis on empowering factors, BASNEF model can be used as a framework to develop educational interventions for self-care.

Key words: Self-Care, High Blood Pressure, Basnef

HOW TO CITE THIS ARTICLE: Farzaneh Pourjalil, Sedigheh Abedini, Shokrallah Mohseni, Self-care behavior predictors in patients with high blood pressure admitted to comprehensive health services centers of Bastak city based on BASNEF model, J Res Med Dent Sci, 2018, 6 (2): 6-11, DOI: 10.5455/jrmds.2018622

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Received: 12/11/2017

Accepted: 19/01/2018

pressure has increased from 594 million in 1975 to 1.13 billiards

INTRODUCTION

High blood pressure is increasing in most developing countries due to rapid changes in the people lifestyle (1). As reported by World Health Organization (2015), 24.1% of males and 20.1% of females over the age of 18 years have diastolic blood pressure higher than 140 or diastolic blood pressure higher than 90 mmHg around the world. In addition, the number of adults with high blood

in 2015, and this increase is seen in low-income and middle-income countries (2). Such statistics has been estimated to be 26.1% for males and 22.4% for females in Iran. In this regard, the growth of cardiovascular diseases in Iran was approximately 3% in years between 2002 and 2008 (3). One of the approaches, which might improve the control of blood pressure (BP) is patients' involvement in their care. Self-care behaviors have been recognized as one of the main factors in blood pressure control (4).

The Common National Committee of Prevention, Diagnosis, Evaluation, and Treatment of High Blood Pressure (JNC7) recommends for people with high blood pressure to perform six self-care activities, including anti-hypertensive drug regimes, to maintain or loss of weight, low-salt diet, limited using of alcohol and tobacco, participation in regular physical activity. In spite of positive impacts of these self-care behaviors in the treatment and management of high blood pressure, the involvement rate of people with high blood pressure in self-care is relatively low (5). Chodosh et al. (2005) showed that self-care interventions in the case of high blood pressure disease were very effective, so that systolic and diastolic blood pressures were reduced by of 5 and 4.3 mmHg, respectively, by using self-care (6). As our final goal in people with high blood pressure is increasing their self-care capability, using a model as a framework to identify the factors involved in the self-care weakness of patients and developing educational programs seems to be an essential. There are many health education models, which can be used in determining the relationship among the health behaviors (7).

BASNEF model is one of the useful educational models, which in addition to knowledge and attitude, considers the environmental factors and abstract norms as effective in compliance of people from health behaviors (8). The BASNEF model is the most comprehensive model used to investigate the behaviors and to identify the behavior and development of new behaviors in society. It is a combination of proceed model and behavioral intention model (9). The objective of the current research was to determine self-care behavior predictors in patients with high blood pressure, admitted to Bastak city health centers based on the BASNEF model.

MATERIALS AND METHODS

In this cross-sectional type of descriptive-analytic study, the self-care behavior predictors were investigated in patients with high blood pressure based on the BASNEF model. The research sample included 180 people. According to the sampling method, out of 17 comprehensive health services centers, 4 comprehensive health services centers were selected as research environment. Then, among all patients listed in the selected comprehensive health services centers, those who met the inclusion criteria of study were randomly selected and participated in the research.

Inclusion criteria of the research included people with primary type of high blood pressure (primary type of high blood pressure is the most common form of high blood pressure, which its cause is "typically" unknown and accounts for 90% of disease cases), having the minimum age of 30 years and maximum age of 60 years with literacy of the of at least elementary level of education at home, having care file in comprehensive health service centers.

Exclusion criteria of study included comorbidity (diabetes, kidney, and cancer diseases), using psychosocial drugs, treatment of blood pressure using specific regimens (for example, non-drug treatment), and lack of consent to participate in the research. Data collection tool was a questionnaire consisting of three sections as follows:

The first section consists of 6 questions on demographic variables such as age, gender, marital status, job, and literacy level, and history of high blood pressure among family members. The second sections consists of 13 questionnaires measured by the three-option scale (yes, no, and I do not know), in which option yes receives the score 1, option no and I do not know receive the score zero. The score range was between 0 and 13. The third section included the questions of the BASNEF model constructs, in which the attitude construct was measured with 10 questions with 5-option Likert scale from completely agree (4) to completely disagree (0). The obtained score was in the range between 0 and 40, in which the higher score indicates a positive attitude toward self-care. Empowering factors were measured with 11 questions with a three-option scale (yes, somewhat, and no), in which the option "Yes" receives the score 2, the option "Somewhat" receives the score 1, the option "No" receives the score zero (range 0 to 22). A higher score of this construct suggests the presence of empowering factors for self-care. The construct of abstract norms was also measured using 4 questions with a 5-option Likert scale from very high (4) to at all (0). The range of obtained score was between 0 to 16, in which the higher score suggests abstract norms encouraging for self-caring. The self-care behavior of high blood pressure consists of 9 questions with 4-option Likert scale from always (3) to never (0). The range of obtained was between 0 to 27. In the current research, self-care behaviors included regular control of blood pressure (monthly measurement of blood pressure at health center), reduced salt intake (salt intake less than 5 g (less

than one teaspoonful per day), non- smoking and lack of using hubble-bubble, regular physical activity (physical activity for 150 minutes per week, equivalent to 30 minutes for 5 times per week), reduced use of fat, reduced anxiety, and regular use of drug. The validity and reliability of the questionnaire was confirmed by Izadi Rad et al (2014) (10). After obtaining the permission of relevant officials and observing ethical principles, such as ensuring the research samples on confidentiality of information, obtaining the consent and willingness of patients to participate in the research, and stating the research objectives, the questionnaire was provided to research samples to be completed. The collected data were analyzed using SPSS18 software and descriptive statistics of frequency, relative frequency, mean, and standard deviation, and analytical statistics of logistic regression, linear regression, Pearson correlation, and Chi-square. In this research, $p < 0.05$ was considered as a significant level.

RESULTS

The mean age of the samples was obtained to be 50.62 ± 7.549 . Based on the research findings, 90 (50%) were female and 90 (50%) were male. In terms of education, 64 (35.6%) were illiterate and 57 (46.3) had high school level of education. Additionally, 167 people (92.8%) were married, 11 people (6.1%) were widow, and 2 people (1.1%) were single. In terms of job, 75 people (44.7%) were employed and 86 people (47.8%) were housekeeper.

Frequency of self-care behaviors status in the research samples has been shown in Table 1.

Table 1. Frequency of self-care behaviors status in studied samples

Self-care behaviors	N (%)
Regular use of drug over the last one month	144 (80)
Physical exercises	28 (15.6)
Regular measurement of blood pressure	37 (20.6)
Observing the low-salt diet	101 (56.1)
Observing low-fat diet	94 (52.2)
adherence to using drug in the case of improved general status of body	140 (77.8)
Reduced anxiety in life over the last one month	17 (9.4)
Non-using Hubble bubble	151 (83.9)
Non-smoking	176 (97.8)

The descriptive statistics and correlation coefficient between the knowledge and the BASNEF model constructs are shown in Table 2. In this research, the most important BASNEF model constructs in predicting the self-care behavior in patients with high blood pressure were identified using logistic regression analysis and Backward Stepwise Wald method. In this regard, the optimal model was introduced in the second stage as the best model and the constructs of attitude and the empowering factors were considered as the most important self-care behavior predictors in high blood pressure patients (Table 3).

Table 2. Mean, standard deviation, range of score, and Pearson correlation coefficient among BASNEF Model constructs

variables	Knowledge	Attitude	behavior	Empowering factors	Abstract norm	mean±SD	Acquired score range
Knowledge	1					8.21±2.276	0-13
Attitude	0.598 **	1				28.12±4.429	0-40
behavior	0.308 **	0.353 **	1			20.14±2.947	0-27
Empowering factors	0.252 **	0.300 **	0.540 **	1		15.23±2.715	0-22
Abstract norm	0.326 **	0.452 *	0.265 **	0.233 **	1	12.62±2.307	0-16

** Correlation is significant at the level of 0.001

Table 3. Logistic regression analysis of BASNEF model variables as f self-care behavior predictor

		B	S.E.	Wald	p-value	OR	95% C.I.for EXP(B)	
							Upper	Lower
First stage	attitude	0.079	0.046	3.0023	0.083	1.082	0.990	1.183
	Empowering factors	0.393	0.080	24.416	0.000	1.482	1.268	1.732
	Abstract norm	0.104	0.084	1.529	0.216	1.110	0.941	1.308
	Constant	-9.972	1.747	31.424	0.000	0.000		
Second stage	attitude	0.101	0.042	5.672	0.017	1.106	1.018	1.201
	Empowering factors	0.399	0.079	25.285	0.000	1.490	1.276	1.741
	Abstract norm	-9.175	1.647	31.02	0.000	0.000		

Method: Backward Stepwise Wald; Dependent variable: Self-care behavior; Final Model (second stage): attitudes and empowering factors

Table 4. Linear regression analysis in order to determine the impact of attitude and empowering factors on self-care behavior

		Unstandardized Coefficients		Standardized Coefficients	t	p
		Beta	Std. Error	Beta		
Second stage	Constant	8.328	1.359	-	6.128	0.00
	Attitude	0.140	0.043	0.210	3.258	0.001
	Empowering factors	0.518	0.070	0.478	7.416	0.00

Method: Backward; Dependent variable: self-care behavior; Final model (second Stage): attitude and empowering factors

Findings of Table 4 showed that using linear regression analysis, attitudes ($p=0.001$ and $\beta = 0.140$) and empowering factors ($p=0.00$ and $\beta = 0.518$) had impact on self-care behavior.

DISCUSSION

The current research was conducted to determine the self-care behavior predictors based on the BASNEF model in patients with high blood pressure in Bastak city. Findings of the current research showed that 80% of patients took the drug regularly. In a research conducted by Muhammad Bilal *et al.* (2016), it was found that 89.9% of the subjects adhered to the anti-hypertensive drug protocol (11).

Additionally, in the research conducted by Alavijeh *et al.* (2012), 80% of patients took the drug regularly (12). These findings are in line with findings of our study, but they are not in line with findings of Zhaoqing Sun *et al.* (2010) conducted in China (13). The cause of this difference might be due to difference in design of the present study and the measurement of parameters in the two studies. Research findings also revealed that only 20.6% of the subjects regularly controlled their blood pressure. In a research conducted by Huanhuan Hu *et al.* (2013), it was found that 44.3% of the subjects controlled their blood pressure (14).

Findings of the research conducted by Muhammad Bilal *et al.* (2016) also revealed that 69.1% of the subjects regularly controlled their blood pressure (11), which it was not in line with result of the current research. The cause of this difference might be lack of knowledge on the importance of regular control of blood pressure control. Findings of the current research revealed that only 15.6% of the subjects had physical activity, which in some of the studies, physical activity was less or more than this result, as reported in the research conducted Hazavehei *et al.* (2015) (8.9%) (15). However, in the research conducted by Huanhuan Hu *et al.*

(2015), 51.9% of the research samples performed the physical activity regularly (16).

Additionally, in the research conducted by Warren-Findlow *et al.* (2011), 52.2% of the subjects performed physical activity regularly (17). The probable cause for this difference might be difference in the gender distribution of research samples in studies, so that the ratio of female and male participants was equal in the current research, while in the mentioned studies, most of the samples were female and they performed more physical activities due to fitness and more sensitivity to disease.

In addition, findings of the current research revealed that 56.1% of people had low-salt diet. In a research conducted by Hazavehei *et al.* (2015), 49.8% of people had low-salt diet (15), which it is in line with finding of our research. In a research conducted by Huanhuan Hu *et al.* (2015), 81.1% of people adhered to a low-salt diet (16). In the research carried out by Dickson *et al.* (2017), findings revealed that only 27.5% of the subjects adhered to low-salt diet (18), which is not in line with findings of current research. The cause of this difference might be difference in the ethnicity of the research samples, so that samples of the current research belonged to single ethnicity, but in the research conducted Dickson *et al.*, the research samples belonged to different ethnicities and this might result in difference in people attitudes to salt intake. Findings of the research also showed that 52.2% of the subjects adhered to low-fat diet.

In a research conducted by Hazavehei *et al.* (2015), 46.1% of people avoided using high-fat foods (15). In the research conducted by Dickson *et al.* (2017), it was found that only 13.5% of subjects used low-fat foods (18). The research findings also showed that 97.8% of the subjects were non-smokers. In a research carried out by Hazavehei *et al.* (2015), 86.1% of the subjects were non-smokers (15). Additionally, in the research conducted by J Warren-Findlow *et al.* (2011), 74.7% of the

subjects were non-smoker (17). Findings of the research also showed that 9.4% of people had a reduced anxiety in their lives. In a research conducted by Dickson *et al.* (2017), 35.5% of people had reduced stress in their lives (18).

Findings suggest that among the variables of the BASNEF model, attitude and empowering factors were introduced as the most important self-care behavior predictors among patients with high blood pressure. Among the empowering factors evaluated in the current research included the educational needs and providing adequate information on the way of preparing healthy food, compliance with the conditions before measurement of blood pressure, and obtaining the family support in the provision of drug and food for patients and cooperation of health care providers to get blood pressure and education. Based on the research findings, it seems that these factors to be effective in examining self-care behaviors among patients with high blood pressure. In this regard, findings of the research conducted by Rahaei *et al.* (2012) findings revealed that empowering factors with a total effect of 61% is considered as the strongest self-control behavior predictor among patients with high blood pressure (19). The findings of the research conducted by Moeeni *et al.* (2011) revealed that attitude had an impact on the behavioral intention of physical activity, which is in line with our findings (20).

In the research conducted by Zahra Oujji *et al* (2015), the construct of knowledge, attitude, and abstract norm predicted the intention to perform postpartum physical activity among the women (21). In this regard, the research conducted by Hillhouse and Karen indicated that empowering factors and abstract norms were the most important predictor of treatment behaviors (22, 23). However, this result was not in line with the results of some studies, including the results of the research conducted by Zahra Oujji *et al* (2015), in which it was found that the construct of empowering factors played no role in predicting behavior (21). Additionally, in the research conducted by Mosnier-Pudar *et al.* (2010), they found that attitude played no significant role in proper treatment of diabetes (24). In the research conducted by Karen *et al.* (1995), results indicated that in older diabetics, abstract norms had higher impact on adherence to prescriptive treatments compared to attitude (23). The reason for this difference might be related to population studied, so that our research was conducted on patients

with high blood pressure, but the above-mentioned research was conducted on diabetic patients.

CONCLUSION AND RECOMMENDATION

The research findings showed that attitude and empowering factors are two important self-care predictors in patients with high blood pressure. Thus, it is recommended that educational courses (theoretical and practical) on self-care to be hold for people with high blood pressure to enhance their knowledge and to empower them for self-caring and develop a positive attitude toward self-care.

Limitation: As research samples were selected only from those people admitted to comprehensive health service centers, where they had file, it limits the generalizability of the research findings.

ACKNOWLEDGMENTS

This paper was derived from master thesis written in the health education area. It was funded by the Deputy of Research and Technology of Hormozgan University of Medical Sciences. Thereby, we appreciate their efforts. We also appreciate the honorable personnel of the comprehensive health service centers in Bastak city and honorable patients participated in this research.

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