Brief Report

Determinants of Hypertension Self-management Behaviors: An Application of the Intervention Mapping Approach

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Abstract

Background: Hypertension is one of the key risk factors for several diseases.
Objectives: The aim of this study was to determine the determinants of hypertension self-management behaviors (HSBs) based on intervention mapping approach.
Methods: A cross-sectional study was conducted among 800 hypertensive patients in southwestern Iran in 2018. A structured questionnaire was applied for data collection. Data were analyzed using SPSS version 16.
Results: The mean age of respondents was 58.25 years (SD: 12.10; age range: 30 - 74 years). The best predictors for HSBs were perceived barriers, outcome expectations, and self-efficacy.
Conclusions: Our findings have implications for the evidence-based design of HSBs promotion interventions.

Keywords: Hypertension, Perceived Barriers, Outcome Expectations, Self-Efficacy

1. Background

Hypertension is one of the key risk factors of atherosclerosis, stroke, and heart and kidney failure (1, 2). In the last four decades, the prevalence of hypertension has reduced in high-income countries but increased in low-income countries, and is anticipated to increase by 60% to reach 1.56 billion worldwide by 2025 (3). Hypertension can be prevented or controlled by changes in lifestyle, including medication adherence, weight loss, increased physical activity, refraining from smoking, complying with a healthy diet rich in fruits and vegetables, and reduced sodium intake (4). Identifying determinants of self-management behaviors in patients helps health promotion experts to develop health-promoting programs. In this regard, the intervention mapping (IM) approach is one of the most popular frameworks for planning health promotion programs (5). IM has been used in several studies of the self-management behaviors promotion of chronic diseases (6, 7).

2. Objectives

The aim of the study was to determine the determinants of hypertension self-management behaviors (HSBs)

based on the IM approach.

3. Methods

3.1. Participants and Procedure

This cross-sectional study was conducted on the rural population of Shadegan in Khuzestan Province, Iran in 2018. The data collection was performed in the following steps. First, the villages of Shadegan were considered as a cluster. Then, based on the probability proportional to the size of each cluster, participants were randomly selected. The sample size was calculated at the 95% significant level, and the standard deviation (SD) of HSBs according to the result of a pilot study was 4.47. Considering an error rate (d) of 0.1, the sample was estimated as 800, of whom 730 signed the consent form and voluntarily agreed to participate in the study (response rate: 91.2%). A confirmed diagnosis of hypertension for over six months, age > 30 years, and the use of at least one antihypertensive medication were considered as the inclusion criteria.

3.2. Measures

Data were collected through face-to-face interviews with the participants using written questionnaires (Ap-

pendix in supplementary file). Four health care providers working in the health centers of the region were trained on how to collect the data. The data collection tool had three parts. The first part contained six items on demographic information, including age, gender, marital status, education level, household size, and economic status.

The second part of the questionnaire included five items on HSBs, including smoking, physical activity, proper food regimen, weight control, and medication adherence. Each item was scored from 0 to 4, making the total score between 0 and 20 points. Higher scores were indicative of better HSBs. Cronbach's alpha was calculated as 0.81.

The third part assessed the attitude (Att), outcome expectations (OE), perceived barriers (PB), subjective norms (SNs), and self-efficacy (SE). The research team developed the questionnaire using the results of previous studies ([8-10]), as well as the first and second steps of the IM approach ([5]). The participants answered the constructs' items on a Likert scale from 1 to 5. The reliability coefficients for the abovementioned constructs were as follows: (1) Att (α = 0.72), (2) OE (α = 0.78), (3) PB (α = 0.88), (4) SNs (α = 0.79), and (5) SE (α = 0.70), attesting to the internal consistency of the measures.

3.3. Data Management and Analysis

The SPSS-16 was used for the data analysis. Multiple linear regressions was performed to explain the variance and predictability in the HSBs according to the variables of (1) Att, (2) OE, (3) PB, (4) SNs, and (5) SE. The validity of the questionnaires was confirmed using an expert panel. Cronbach's alpha was used to estimate the internal consistency of different measures.

3.4. Ethical Approval

The Research Ethics Committee of Abadan School of Medical Sciences, Iran (IR.ABADANUMS.REC.1395.038) approved the study protocol. All participants signed an informed consent.

4. Results

The mean age of participants was 58.25 years (SD = 12.10), and age range was 30 - 74 years. More details of demographic characteristics of the participants are shown in Table 1.

Our results suggested that the assessed constructs explained 51% of the variance in HSBs (Table 2).

The mean, standard deviation, score range, and correlation between the studied constructs are shown in Table 3.

Table 1. Distribution of the Demographic Characteristics Among the Participants

Variables	No. (%)
Age	
Middle-aged	340 (46.6)
Elderly	390 (53.4)
Gender	
Female	421 (57.7)
Male	309 (42.3)
Marital Status	
Single	38 (5.2)
Married	510 (69.9)
Widow	182 (24.9)
Education	
Illiterate	179 (24.5)
Primary school (5 grades)	293 (40.1)
Secondary school (8 grades)	128 (17.5)
High school (12 grades)	92 (12.6)
Academic (16 grades)	38 (5.2)
Household Size	
1 - 2	92 (12.6)
3 - 5	582 (79.7)
More than 5	56 (7.7)
Economic Status	
Poor	154 (21.1)
Middle	450 (61.6)
Good	126 (17.3)

5. Discussion

According to our findings, socio-cognitive constructs explained 51% of the variance in HSBs. The present findings also showed that PB, OE, and SE were the strongest determinants of HSBs. This result is not similar to the results reported by other studies ([8-10]). In this regard, Bane et al. reported a significant relationship between self-efficacy and medication adherence in hypertensive patients ([8]). Furthermore, Lewis et al. indicated the important role of behavioral outcome in hypertensive medication adherence ([9]). Moreover, Fongwa et al. reported financial resources and stressful settings as barriers to adherence to treatment in women with hypertension ([10]).

5.1. Conclusion

This research provides a foundation for planning health promotion programs to increase HSBs. Planning a health promotion program to increase OE and SE and reduce PB may be useful to increase HSBs.

Table 2. The Determinants of HSBs

Model	Unstandardized Coefficients		Standardized Coefficients	*t*	P
	B	SE	Beta		
Step 1					
Att	0.049	0.037	0.038	1.330	0.184
OE	0.377	0.038	0.292	9.858	< 0.001
PB	-0.225	0.028	-0.314	-8.006	< 0.001
SNs	0.014	0.024	0.019	0.597	0.551
SE	0.315	0.047	0.248	6.742	< 0.001
Step 2					
Att	0.050	0.037	0.038	1.357	0.175
OE	0.382	0.037	0.296	10.244	< 0.001
PB	-0.232	0.025	-0.324	-9.192	< 0.001
SE	0.313	0.047	0.247	6.721	< 0.001
Step 3					
OE	0.389	0.037	0.301	10.490	< 0.001
PB	-0.233	0.025	-0.325	-9.222	< 0.001
SE	0.328	0.045	0.259	7.254	< 0.001

Table 3. The Mean, Standard Deviation, Score Range, and Correlation Between the Determinants of HSBs

Variables	Mean (SD)	Range	Att	OE	SNs	SE	HSBs
Att	14.60 (3.37)	5 - 25	1				
OE	14.32 (3.39)	5 - 25	0.267**	1			
PB	21.04 (6.13)	7 - 35	-0.288**	-0.382**	1		
SNs	23.63 (5.92)	8 - 40	0.217**	0.386**	-0.572**	1	
SE	14.81 (3.46)	5 - 25	0.384**	0.408**	-0.671**	0.384**	1
HSBs	8.29 (4.39)	0 - 20	0.306**	0.531**	-0.614**	0.415**	0.600**

Supplementary Material

Supplementary material(s) is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

was kept confidential.

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