Predictive Factors of Adherence to Self-Care Behaviors Based on the Health Action Process Approach in Patients with Hypertension in Southern Iran

Abstract

Aims: Patients with hypertension must engage in self-care behaviors to control their condition and prevent complications throughout their lives. This study aimed to determine the predictive factors of adherence to self-care behaviors in patients with hypertension.

Materials & Methods: This descriptive-analytical study was conducted on 451 patients with hypertension in 2024, selected using a multi-stage cluster sampling method. Data were collected using a researcher-developed questionnaire based on the constructs of the Health Action Process Approach (HAPA). The data were analyzed using SPSS 26 and descriptive statistical tests, Pearson correlation, and multiple regression analysis, with a significance level of 0.05.

Findings: The mean score of the motivational phase constructs was higher than that of the volitional phase constructs. In the motivational phase, the constructs of risk perception, outcome expectations, and task self-efficacy predicted 98% of the intention to engage in self-care behaviors. In the volitional phase, the constructs of action planning and coping planning predicted 90% of the self-care behavior. Finally, in the behavior continuation phase, maintenance, and recovery self-efficacy predicted 77% of the self-care behavior.

Conclusion: The results of this study demonstrated that the HAPA explains self-care behavior in patients with hypertension. Therefore, it is recommended that planners and experts incorporate HAPA constructs, especially risk perception, outcome expectations, task self-efficacy, action planning, and maintenance self-efficacy, in patients with hypertension can strengthen their self-care behaviors, encouraging both the adoption and sustained practice of these behaviors.

Keywords: hypertension, self-care, patients, health action process approach

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Introduction

Hypertension has emerged as a global public health issue with serious consequences for human health[1]. It affects approximately one billion adults and is associated with over 9 million deaths annually[2]. Recent research indicates that hypertension increases the vulnerability of adolescents to cardiovascular disease, kidney disease, and arterial wall dysfunction[3]. It is also associated with an increased risk of premature mortality in adulthood[4]. Several international, regional, and national guidelines recommend lifestyle interventions as the primary approach to managing hypertension[5].

Self-care behaviors play a critical role in managing hypertension effectively[6,7]. Patients with hypertension must adopt specific self-care behaviors such as adhering to medication, following a low-salt diet, engaging in regular physical activity, monitoring regular blood pressure, avoiding alcohol consumption, and refraining from smoking throughout their lives[8,9].

These patients have a significant need for self-care[10]. Despite the benefits of self-care behaviors in controlling hypertension, many patients fail to follow the recommended practices[10,11]. The self-care status of these individuals often appears suboptimal[12-14]. According to Selçuk et al., self-care behavior and low health literacy were identified as modifiable risk factors contributing to uncontrolled blood pressure[15]. A systematic review by Nahtani et al. found that patients with hypertension who had higher health literacy were more likely to control their condition[16]. Although some evidence suggests a correlation between health literacy and self-care behaviors, this evidence is limited. A key factor contributing to this gap may be a lack of motivation to engage in self-care behaviors.

In patients with hypertension, readiness, motivation, and adherence to lifestyle changes — especially efforts to control blood pressure and weight — are neither simple nor easy[17,18]. These challenges suggest that implementing self-monitoring behaviors in these patients is far from simple, revealing a gap between awareness and actual practice. To address this, theories and models can be used to identify and evaluate the factors affecting behavior formation and persistence[19].

Health Action Process Approach (HAPA) is one highly effective theory that has greatly contributed to the understanding of factors affecting health behavior performance and maintenance[20]. HAPA posits that adopting a behavior requires individuals to progress through two distinct phases: motivational and volitional. In the motivational phase, three key factors—risk perception, outcome expectation, and self-efficacy—shape behavioral intention. This prepares the individual to commit to a certain behavior and make related decisions. Once the behavioral intention is formed, the individual transitions to the volitional stage, where they plan the behavior by action planning and coping strategies. Finally, the constructs of coping self-efficacy and recovery self-efficacy lead to the continuation of the behavior[21].

Considering the importance of improving self-care behaviors in patients with hypertension and the need to bridge the gap between their knowledge and practice, coupled with the limited research applying the HAPA to self-care behaviors in this population, this study aimed to identify the key modifiable factors affecting adherence to self-care behaviors in patients with hypertension. The findings will inform the development of targeted educational interventions.

Methods

Study design and participants

This descriptive-analytical study was conducted on 451 patients with hypertension in Jiroft city, Kerman province in southern Iran, using a mixed sampling method (cluster and simple random). For sampling, each of the 12 comprehensive health centers in Jiroft was considered as a cluster. Five centers were then selected using a simple random method, and patients from each center were selected based on the sample size. According to the national disease control guidelines, patients are typically followed up and cared for by a healthcare provider at least monthly and by a physician every three months. Patients visiting the selected centers from April 5 to October 5, 2024 were screened for eligibility. Those meeting the inclusion criteria were invited to cooperate. Depending on their willingness, participants completed and submitted the questionnaire either during the same visit or at a follow-up appointment.

Inclusion criteria included a confirmed hypertension diagnosis (blood pressure of 140/90 mmHg or higher), residency in Jiroft city, and voluntary and informed consent. The exclusion criterion was

incomplete questionnaire. For poorly educated patients, healthcare providers collected data through interviews.

Data collection tool

Data were collected using a researcher-developed questionnaire, which consisted of demographic information (age, gender, education, and income), HAPA constructs, and self-care assessment questions.

The risk perception construct included three items to measure patients' perception of hypertension-related risks. Responses were scored on 4-point Likert scale from 1 (completely false) to 4 (completely true), with total scores ranging from 3 to 12. Higher scores indicated higher levels of risk perception.

The outcome expectancy construct consisted of four items to measure patients' expectations (positive or negative) of self-care behavior outcomes. Responses ranged from 1 (completely false) to 4 (completely true) on a 4-point Likert scale, with scores ranging from 4 to 16. Higher scores reflected higher levels of outcome expectations.

The action self-efficacy construct used eight items to measure patients' perception of their confidence to perform self-care behaviors. Responses were scored on a 5-point Likert scale ranged from 1 (completely false) to 5 (completely true), with scores ranging from 8 to 40. Higher scores denoted higher levels of action self-efficacy.

The behavioral intention construct consisted of eight items to measure patients' intention to engage in self-care behaviors. Responses were on a 4-point Likert scale, with scores ranging from 8 to 32. Higher scores indicated higher levels of behavioral intention.

The action planning construct consisted of three items to determine whether patients had clear and precise plans for self-care behaviors. Responses ranged from 1 (completely false) to 4 (completely true) on a 4-point Likert scale, with scores ranging from 3 to 12. Higher scores reflected better action planning.

The coping planning construct included four items to assess patients' plans to overcome barriers to self-care behaviors. Responses were scored on a 4-point Likert scale from 1 (completely false) to 4 (completely true), with scores ranging from 4 to 16. Higher scores indicated higher levels of coping planning.

The maintenance self-efficacy construct included four items to assess patients' confidence in sustaining self-care behaviors in difficult situations. Responses ranged from 1 (completely false) to 5 (completely true) on a 4-point Likert scale. Possible scores for this scale ranged from 4 to 20, with higher scores indicating higher levels of maintenance self-efficacy.

The recovery self-efficacy construct included three items to assess patients' confidence in resuming self-care behaviors after temporary lapses. Responses were on a 4-point Likert scale ranging from 1 (completely false) to 4 (completely true). Possible scores for this scale ranged from 3 to 12, with higher scores indicating higher levels of recovery self-efficacy.

Seven yes/no questions measured self-care behaviors, scored as 1 (yes) or 0 (no), yielding a total score range of 0 to 7.

To ensure content validity, the HAPA and self-care behavior questionnaires were prepared using reputable scientific sources and reviewed by five health education professors and two non-communicable disease experts with relevant expertise. Content validity was assessed using the Content Validity Ratio (CVR) and Content Validity Index (CVI), and the obtained scores were compared with the Lawshe scale. Items with an Item-Level CVI (I-CVI) of 75% or lower were removed. After making the necessary corrections, the questionnaire was re-evaluated by experts, achieving an I-CVI above 0.8 for all items. Face validity of the questionnaire was confirmed by examining feedback from four hypertensive patients, who found all items understandable.

Reliability and internal consistency were tested in a pilot sample of 30 participants over 14 days using Cronbach's alpha (α) and the Intraclass Correlation Coefficient (ICC). Results were as follows: risk perception (α = 0.71, ICC = 0.74), outcome expectations (α = 0.74, ICC = 0.91), task self-efficacy (α = 0.88, ICC = 0.71), behavioral intention (α = 0.93, ICC = 0.82), action planning (α = 0.93, ICC = 0.70), coping planning (α = 0.93, ICC = 0.72), maintenance self-efficacy (α = 0.71, ICC = 0.72), and recovery self-efficacy (α = 0.94, ICC = 0.93).

Data analysis

Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to describe the data. The Kolmogorov-Smirnov test assessed the normality of the error distribution

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for quantitative variables. Multiple regression analysis using the Enter method was used to explain the relationship between the predictor and dependent variables. All tests employed an alpha level of 0.05 and a p-value of P<0.05 was considered statistically significant.

Results

Of the 451 participants, 48.11% (n=217) were 50-60 years old, and 54.78% (n=247) were female. The majority of participants (48.55%, n=109) had lower/upper secondary education (Table 1).

The mean scores of the motivational phase constructs were higher than that for the volitional and the behavior continuation phases (Table 2).

The mean self-care score among participants was 6.53±0.60. The highest self-care score was 7 and the lowest score was 4.

Regression analysis showed a small effect of risk perception constructs (β=0.048) and large effects of outcome expectations (β=0.602) and action self-efficacy (β=0.617) on behavioral intention in the motivational phase. These variables predicted 98% of the variance in the intention to perform self-care behavior (Table 3).

In the volitional phase, the constructs of coping planning (β= 0.038) and action planning (β= 0.509) significantly influenced the performance of self-care behavior. These constructs predicted 90% of the variance in self-care among patients (Table 4).

Finally, in the behavior continuation phase, self-efficacy measures (β= 0.309) influenced the performance of self-care behavior, accounting for 77% of the self-care changes in patients (Table 5).

Table 1. Participant information (n=451)

Variable		**Frequency**	**Percent**
Age	40-50	123	27.27
	50-60	217	48.11
	60-70	103	22.83
	70-80	8	1.77
Gender	Male	204	45.23
	Female	247	54.76
Education level	Lower/upper secondary	219	48.55
	Diploma and Associate's degree	190	42.12
	Bachelor's degree and above	42	9.31
Monthly income	Less than $200	126	27.93
	Between $200 and $400	256	56.76
	Above $400	69	15.29

Table 2. Mean score of the HAPA constructs in the study group

Approach phases		Mean	Standard Deviation	Minimum	Maximum
Motivational phase	Risk perception	7.62	0.74	5	9
	Outcome expectation	11.22	1.25	8	15
	Task self-efficacy	17.43	1.99	14	24
Volitional phase	Behavioral intention	17.43	1.99	14	24
	Action planning	7.27	1.07	6	9
	Coping planning	7.30	1.49	4	12
Behavioral Continuation Phase	Maintenance self-efficacy	7.31	1.47	4	12
	Recovery self-efficacy	4.96	0.51	5	7

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Table 3: Results of multiple regression analysis to predict intention to perform self-care behavior

Variables	B-coefficients	Standard beta coefficients	T-statistic	P-value	R
Constant	0.136		1.222	0.222	0.98
Risk perception	0.048	0.180	3.083	0.02	
Outcome expectation	0.602	0.379	26.763	0.001	
Task self-efficacy	0.617	0.621	43.341	0.001	

Table 4: Results of multiple regression analysis to predict self-care behavior

Variables	B-coefficients	Standard beta coefficients	T-statistic	P-value	R
Constant	3.39		28.81	0.001	0.90
Behavioral intention	-0.048	-0.156	-6.263	0.001	
Action planning	0.509	0.901	28.929	0.001	
Coping planning	0.038	0.094	2.926	0.004	

Table 5: Results of multiple regression analysis to predict the continuation of self-care behavior

Variables	B-coefficients	Standard beta coefficient	T-statistic	P-value	R
Constant	3.997		27.64	0.001	0.77
Maintenance self-efficacy	0..309	0.751	23.035	0.001	
Recovery self-efficacy	0.061	0.059	1.82	0.069	

Discussion

The present study aimed to determine the predictive factors of adherence to self-care behaviors in patients with hypertension in southern Iran, based on the Health Action Process Approach.

The results of multiple regression analysis showed that the constructs of risk perception, outcome expectations, and task self-efficacy predicted 98% of the intention to perform self-care behavior. Among these, task self-efficacy emerged as the strongest predictor of self-care intention (β = 0.61), followed by outcome expectations ((β = 0.60) and risk perception (β = 0.04).

These findings align with those of Mohammadi Zeidi et al., who reported task self-efficacy as the most important predictor of physical activity intention in hypertensive patients, with outcome expectations and risk perception also demonstrating statistically significant effects on intention[22]. Wu et al. identified perceived barriers, perceived benefits, and task self-efficacy as key predictors of intention[23]. Furthermore, Tajaruddin et al. found a significant correlation between risk perception, outcome expectations, task self-efficacy, and intention regarding diet adherence in patients with type 2 diabetes[24]. WHO has reported that 46% of adults with hypertension are unaware of their condition[25].

According to health behavior theories, health behaviors are controlled by health intentions and beliefs such as risk perceptions, outcome expectations, and self-efficacy beliefs[26]. A study by Soylu et al. observed moderate levels of risk awareness, self-awareness, and treatment compliance among the study participants. Risk awareness was positively correlated with treatment compliance and self-efficacy[25]. Therefore, interventions focusing on enhancing risk perceptions, outcome expectations, task self-efficacy, and intention factors through educational and counseling activities are necessary to improve blood pressure control behaviors in patients with hypertension

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The results of multiple regression analysis showed that action planning and coping planning constructs predicted 90% of self-care behavior. Action planning was the strongest predictor (β= 0.509), followed by coping planning (β=0.038).
Mohammadi Zeidi's study demonstrated that HAPA constructs predicted 31% of the variance in physical activity behavior in hypertensive patients[22]. Wu et al. showed that changes in the physical environment affect intention, with perceived disadvantages having a negative effect. Intention positively affected action planning and coping planning[23]. The intention-behavior gap has long been recognized as a barrier to changing health behavior, and action planning and coping planning can bridge this gap[27].
Wee et al. showed that intention, past exercise habits, and action planning were significant predictors of changes in physical activity behaviors[28]. Lee et al. found that the strength of the intention-behavior relationship in exercising increased linearly with higher levels of action planning and maintenance self-efficacy[29].
While intentions are important predictors of behavior change, developing habits to engage in activities related to a healthy lifestyle and chronic disease management appears to be even more important than intention alone. Furthermore, action planning can be a useful intervention to bridge the intention-behavior gap, thereby enhancing overall self-care and preventive behaviors[30].
The results of multiple regression analysis showed that the constructs of maintenance self-efficacy and recovery self-efficacy predicted 77% of self-care behavior. Maintenance self-efficacy was the strongest predictor (β=0.30) of, followed by recovery self-efficacy (β= 0.061).
A study by Luszczynska et al. showed that recovery self-efficacy and intention jointly predicted running behavior over a two-year period. However, unlike the present study, where maintenance self-efficacy was the most important predictor of self-care behavior continuation in hypertensive patients, maintenance self-efficacy did not predict running behavior in their research[31]. In a study by Park et al. recovery self-efficacy was an important factor that moderated the association between poor sleep quality (as a result of work-school conflict) and fatigue[32].
Given that recovery self-efficacy remained the only significant predictor of social cognitive behavior in health behaviors among individuals, who experienced a lapse in health behaviors[31], and given the favorable status of planning self-efficacy and action self-efficacy in the present study, it is possible that the participants in the present study experienced less relapses than those in the aforementioned studies. This could highlight the role of maintenance self-efficacy versus recovery self-efficacy in this specific context. On the other hand, specific behaviors under study between the aforementioned studies and the present study may have caused this difference.
In the study by Warren-Findlow et al. over half of the participants reported having good self-efficacy for managing their blood pressure. Notably, good self-efficacy was statistically associated with a higher prevalence of adherence to medication, a low-salt diet, physical activity, non-smoking, and the use of weight management techniques[33]. Conversely, Steca et al. found that hypertensive patients showed no change in dietary behavior, whereas coronary patients improved their nutrition for up to six months and then maintained a healthier diet[34]. It is possible that the higher risk perception in coronary patients increased their intention, behavior change, and behavior persistence compared to hypertensive patients.
Elfeddali et al. indicated that relapse at one and three months after a quit attempt was predicted by low levels of baseline self-efficacy. They also showed that less initial planning significantly predicted relapse at one month, and recovery self-efficacy only predicted relapse after the first month[35]. Pournarani et al. showed a positive and significant relationship between recovery self-efficacy and relapse, with low levels of action planning and action self-efficacy being the most important predictors of relapse[19]. Effective chronic disease management relies on individuals who engage in a variety of self-care behaviors. Self-efficacy, a widely used psychosocial concept, is associated with the ability to manage chronic disease[33].

Limitations

Our study had limitations. The use of self-report for data collection introduces the potential for reporting bias. To address this limitation, data were collected anonymously as much as possible.

Conclusion

Based on the results of the present study, the HAPA-based multi-component intervention strategy can be a promising self-management mode for the routine healthcare of patients with hypertension. Our results suggest that enhancing HAPA constructs in this population, especially risk perception,

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outcome expectations, task self-efficacy, action planning, and maintenance self-efficacy, can strengthen self-care behaviors and promote their adoption and continuation. In addition, it is recommended that planners and experts use the theoretical framework of this approach when developing educational interventions aimed at fostering healthy behaviors.

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