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The Experiences of Self-Care Behaviors in Patients with Essential Hypertension: A Qualitative Content Analysis

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Abstract

Background: Essential hypertension remains a significant global health challenge. Self-care is among the most effective strategies for managing this condition. Understanding patients' perspectives and experiences regarding self-care behaviors can significantly aid nurses in enhancing these behaviors.

Objectives: This study aims to explore self-care behaviors in patients with essential hypertension.

Methods: This qualitative study employed conventional content analysis to examine 16 patients and three healthcare providers associated with urban healthcare centers affiliated with Shahroud University of Medical Sciences in Semnan province, Iran, during 2023 - 2024. Participants were selected through purposive sampling. Data were collected via individual, semi-structured, in-depth interviews, which were recorded and transcribed. The transcripts were analyzed using the method proposed by Elo and Kyngäs (2008).

Results: The study identified "Yo-Yo-like" self-care behaviors as the main concept, with four primary categories and 12 subcategories extracted. The main categories included fluctuating patterns in medication adherence, dietary adherence, exercise, and smoking.

Conclusions: The self-care behaviors of patients with essential hypertension exhibit coordinated fluctuations, correlating with the disease's severity. As the disease subsides, adherence decreases, and vice versa. This fluctuating pattern has created a vicious cycle in disease control. Interventions, particularly by nurses, are essential to break this cycle and effectively manage hypertension.

Keywords: Hypertension, Essential Hypertension, Self-Care, Qualitative Research

1. Background

Essential hypertension, defined as an increase in blood pressure without a definite cause, is a major global health problem. The prevalence of this disease has doubled in the last 30 years. According to a report from the World Health Organization, approximately 33% of adults aged 30 - 79 are affected by hypertension and its complications (1). A significant portion of these patients belong to low- and middle-income countries (2). In recent years, the increasing number of cases of hypertension in Iran is also a warning that more attention should be given to effective measures to control this disease (3, 4). According to the Eighth Joint National Committee guidelines, 32% of Iranian adults suffer from hypertension (5). This percentage has increased to 53.7% according to the changes in the classification of hypertension in the guidelines of the American College of Cardiology/American Heart Association (6). Essential hypertension is one of the leading causes of death (7, 8), resulting in 10.9 million deaths annually worldwide. This is mainly due to cardiovascular problems, strokes, and kidney

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complications (2, 9, 10). Although hypertension is considered one of the most significant global health threats, it is controllable and modifiable (11). Patients with essential hypertension can significantly reduce the risk and mortality associated with the disease through self-care (12, 13). One of the key global objectives is to promote effective self-care among these patients (14-16). Studies have shown that the ability of individuals to adapt to lifestyle changes, such as altering their eating patterns and achieving weight loss, follows a vicious cycle (17). This cycle, introduced by Brownell et al. in 1986, is known as yo-yo syndrome (18). Notably, many of the actions expected of patients with essential hypertension in terms of self-care also fall within the domain of lifestyle changes (19). Compared to secondary hypertension, which occurs suddenly and is more severe, essential hypertension progresses slowly. These patients often feel healthy despite having high blood pressure, making adherence to self-care behaviors a challenging issue for them (20). Existing studies from all over the world on self-care in hypertensive patients indicate that self-care behaviors are not optimal in these patients (21, 22). According to a study conducted in Iran, at least one-half of the hypertensive patients had a moderate to low level of self-care (23). Poor self-care behaviors in these patients can lead to serious complications of disease and also impose heavy costs on the healthcare system (24, 25). Understanding these behaviors from the patients' perspective and experiences can have significant consequences for knowledge production in this area. Additionally, if nurses aim to improve self-care in hypertensive patients, they must discover patients' self-care behaviors in line with the cultural context, health beliefs, and norms of a society (26). Therefore, qualitative studies can be conducted to gain a true understanding of the behaviors, attitudes, feelings, values, and experiences of these patients (27). As mentioned above, in Iran, the self-care behaviors of hypertensive patients are still an important challenge and require special attention (6, 23). However, studies on the self-care behaviors of patients with hypertension are very limited in this country (28). Therefore, this content analysis study was conducted to explain essential hypertensive patients' self-care behaviors.

2. Objectives

This study aims to explore self-care behaviors in patients with essential hypertension.

3. Methods

3.1. Study Design and Participants

This qualitative study employed the conventional qualitative content analysis method and was conducted in Shahroud city, Semnan province, Iran, from August 2023 to June 2024. Nineteen participants, comprising 16 patients and 3 healthcare providers, were selected through purposive sampling from urban healthcare centers. Patients with essential hypertension were included with consideration for maximum variation in age, sex, education level, and disease history until data saturation was achieved (Table 1). Inclusion criteria were: Age over 18 years, a history of essential hypertension for at least one year, diagnosis by a cardiologist or nephrologist, absence of other chronic diseases, ability to communicate, and willingness to participate and share experiences.

3.2. Data Collection Tool and Technique

Data were collected through face-to-face, semi-structured interviews. Saturation was achieved after 17 interviews, with 2 additional interviews conducted for confirmation. The interviews were conducted by the same researcher in a private room at healthcare centers or participants' homes, by appointment. After obtaining consent and explaining the research objectives, demographic questions regarding age, education level, occupation, marital status, number of children, and disease duration were asked. This was followed by specific questions aligned with the main research objectives. Initially, open-ended questions were posed, such as, "What self-care measures have you taken after learning you have hypertension?" "What results have these self-care measures had for you?" and "What problems have you encountered in carrying out the mentioned measures?" To gather more information, exploratory questions like "Can you explain further?" and "Please provide an example" were used. Interviews continued until in-depth and sufficient data were gathered. They were recorded with the interviewees' permission and subsequently transcribed. The interviews lasted an average of 40 minutes.

3.3. Data Analysis

The data were analyzed using the steps proposed by Elo and Kyngas, which include preparation, organization, and reporting (29). After comprehending the data and selecting the unit of analysis, the

Table 1. Participant Characteristics

Participant ID	Gender	Age (y)	Illness Duration (y)	Marital Status	Level of Education
1	Female	52	4	Married	High school diploma
2	Male	60	10	Married	High school diploma
3	Female	42	9	Married	High school diploma
4	Male	24	5	Married	Bachelor's degree
5	Female	63	10	Married	Middle school
6	Female	59	11	Married	Elementary school
7	Female	68	25	Married	Elementary school
8	Female	52	7	Married	Bachelor's degree
9	Male	65	15	Married	Elementary school
10	Female	61	10	Married	Illiterate
11	Female	58	1	Widowed	Elementary school
12	Female	60	15	Married	Elementary school
13	Female	75	5	Widowed	Illiterate
14	Female	40	-	Married	Nurse
15	Female	45	-	Married	Physician
16	Female	39	-	Married	Nurse
17	Male	57	7	Married	High school diploma
18	Female	67	20	Married	High school diploma
19	Male	60	18	Married	Elementary school

transcripts were read line by line multiple times. Initial codes were assigned to semantic units. These open codes were then grouped based on similarity, forming categories through interpretation. Subcategories containing similar events were combined, and main and abstract concepts were extracted to form the main categories. Evidence from the transcripts was quoted for each concept, and the main categories and subcategories were presented and explained. MaxQDA 2020 was used to organize the data.

3.4. Trustworthiness

The study employed the four criteria outlined by Lincoln et al. to determine validity and trustworthiness (30). To ensure credibility, researchers engaged in extensive and long-term participation to gather more in-depth and authentic data. Codes and data were reviewed by participants and peers. To guarantee dependability, all interviews were transcribed, and all research team members participated in the data analysis process. Confirmability was achieved through a detailed description of the data and study process. Finally, maximum variation sampling was adopted to enhance data transferability.

3.5. Ethical Considerations

The study was conducted after obtaining ethics approval from Semnan University of Medical Sciences (IR.SEMUMS.REC.1401.340). Participants were informed about the study's objectives, data confidentiality, and the recording of interviews. Upon agreeing to participate, they completed an informed consent form. Throughout the study, participants' confidentiality and freedom to withdraw were respected.

4. Results

In this study, "yo-yo-like" self-care behaviors were identified as the main concept. This term describes patients with essential hypertension who engage in acceptable self-care practices when they perceive a danger related to potential complications from elevated and life-threatening blood pressure levels. However, once their symptoms subside and blood pressure normalizes, adherence to self-care behaviors often decreases. Consequently, blood pressure levels become abnormal again, leading to the recurrence of symptoms, hypertensive crises, and potential complications. Patients then attempt to improve adherence to self-care behaviors. If the context remains unchanged, this vicious cycle may repeat as the disease subsides. These fluctuating self-care behaviors were termed "yo-yo-like" and consisted of four main categories and 12 subcategories (Table 2). The main categories include fluctuating patterns in medication adherence, dietary adherence, exercise, and smoking.

Table 2. Categories and Subcategories of Yo-yo Like Self-Care Behaviors

Theme	Category	Subcategory
Yo-yo like self-care behaviors	Fluctuating pattern in medication adherence	Adherence to medication
		Diminished medication adherence
		Return to medication adherence
	Fluctuating pattern in dietary adherence	Adherence to healthy diet
		Return to unhealthy eating habits
		Restarting healthy diet
	Fluctuating pattern in exercise	Adherence to regular exercise
		Returning to a sedentary lifestyle
		Overcoming exercise barriers
	Fluctuating pattern in smoking	Smoking cessation
		Smoking relapse
		Reduction of smoking

4.1. Fluctuating Pattern in Medication Adherence

Patients exhibit coordinated fluctuations in medication adherence that parallel the decrease or exacerbation of symptoms and signs of the disease. As the disease subsides, medication adherence decreases, and vice versa. This category includes three subcategories: Adherence to medication, diminished medication adherence, and return to medication adherence.

4.1.1. Adherence to Medication

Patients with essential hypertension begin taking their medications regularly once they recognize the effectiveness of antihypertensive drugs in controlling blood pressure. They employ various strategies to adhere to their medication regimen to manage their disease. For example, one patient stated, "Wherever I go, I make sure to pack my pills in my bag so I can take them on time" (P11). Another patient mentioned, "I asked my family to remind me when to take my pills so that I do not forget" (P5).

4.1.2. Diminished Medication Adherence

Hypertensive patients may become less diligent in taking antihypertensive medications once their disease subsides. One patient noted, "In the beginning, I used to take my pill on the hour. Little by little, I became more carefree. My blood pressure had improved; maybe that is why I was not as persistent as before. It is not that I do not take my pill, but it is not on the hour" (P9). Another patient shared, "When I feel better, I forget to take my pill" (P6).

4.1.3. Return to Medication Adherence

Essential hypertensive patients may resume strict adherence to antihypertensive drugs after experiencing complications due to inconsistent medication intake. The fear of dangerous complications motivates them to adhere more closely to their medication regimen. One patient expressed, "I am very worried since I had a heart problem. I promised myself to pay more attention to myself and continue taking my pills more regularly" (P6). Another patient recounted, "After a period when I had stopped the medicine and was taking herbal medicine, the chest pain and high blood pressure came to me again. I got scared and started taking my pills again" (P4).

4.2. Fluctuating Pattern in Dietary Adherence

Patients' experiences in following a diet also exhibit a fluctuating pattern. This category is divided into three subcategories: Adherence to a healthy diet, return to unhealthy eating habits, and restarting a healthy diet.

4.2.1. Adherence to a Healthy Diet

By developing knowledge about the disease and understanding its dangerous complications, patients are motivated to change their unhealthy lifestyle. The first step for patients is to follow a healthy diet. One patient stated, "My doctor advised me to change my lifestyle. I immediately started a low-salt diet. I reduced the solid oil and replaced it with liquid oil" (P4).

4.2.2. Return to Unhealthy Eating Habits

Patients often experience a decline in adherence to their diet over time. This can be attributed to the challenges of maintaining a strict diet and a decrease in high blood pressure, which initially motivated them to take better care of themselves. Patients may also justify their decreased adherence to the diet. One patient remarked, "My blood pressure is good now, so I do not need to always eat low-salt food. It is hard and tiring to always eat salt-free food" (P5). Another patient expressed, "I'm exhausted. I attempt to stick to my diet, but it is not as easy as it used to be" (P3). A nurse observed, "When patients notice that their blood pressure has dropped, they tend not to follow their diet as strictly as before. This sometimes results in them returning with high blood pressure" (P14).

4.2.3. Restarting Healthy Diet

Hypertensive patients often struggle to adhere to a healthy diet but may regain their healthy eating habits after experiencing the return of signs and symptoms of their disease. One patient noted, "Since my heart problem and hospitalization, I have been consuming less salt and fat again" (P18).

4.3. Fluctuating Pattern in Exercise

Patients with essential hypertension often face challenges in maintaining a regular exercise routine. Similar to other self-care behaviors, these patients' experiences exhibit a fluctuating pattern in exercise attempts. This category consists of three subcategories: Adherence to regular exercise, returning to a sedentary lifestyle, and overcoming exercise barriers.

4.3.1. Adherence to Regular Exercise

Patients gradually experience the benefits of exercise and develop a positive attitude toward it, leading them to incorporate it into their routines. One patient observed, "Inactivity can actually increase blood pressure. I noticed this. When I did not exercise, I felt worse, and my blood pressure was higher" (P7). Another patient stated, "I began walking because I was afraid of the complications of high blood pressure" (P17).

4.3.2. Returning to a Sedentary Lifestyle

After a period of engaging in self-care behaviors and maintaining a regular exercise routine, patients gradually abandon their exercise program, often with various justifications. Many of these patients also limit exercise to their daily activities. One patient noted, "I used to go for a walk every day, but I have not been able to do so for a while. Now, my walking is limited to shopping" (P6). A doctor commented, "In the beginning, they may start off well, but eventually, each person comes up with an excuse. For example, some because of having children, while others give up on sports owing to lack of time" (P15).

4.3.3. Overcoming Exercise Barriers

After neglecting self-care behaviors and experiencing life-threatening hypertension and disease complications, many patients realize the need to prioritize exercise. To achieve this, they work on overcoming perceived barriers to starting a consistent exercise routine and enhancing their overall mobility. One patient shared, "After the stroke, I parked the car and decided to walk more. I even incorporated climbing back into my routine. With every step I take, I feel like I am moving further away from the stroke" (P9).

4.4. Fluctuating Pattern in Smoking

In addition to other self-care behaviors, smokers with hypertension experience fluctuations in smoking and behaviors related to smoking cessation. This category consists of three subcategories: Smoking cessation, smoking relapse, and smoking reduction.

4.4.1. Smoking Cessation

Smokers are often compelled to quit smoking due to warnings from healthcare providers about potential complications. Despite their addiction, these patients attempt to quit. One patient recounted, "The doctor told me that my veins were affected by my high blood pressure and smoking. I knew I had to stop, so I did" (P9).

4.4.2. Smoking Relapse

As the perceived risk of complications diminishes and symptoms subside, patients may relapse into smoking due to dependence. One patient stated, "I stopped smoking for a brief period, but now that my blood pressure is under control with the medication I'm taking, I have started smoking again" (P2).

4.4.3. Reduction in Smoking

Smokers with hypertension often find it challenging to quit smoking and may return to smoking habits once the severity of the disease subsides. However, these

patients tend to reduce their smoking when faced with disease complications, believing that smoking reduction can be effective in managing the disease. One patient noted, "After suffering a stroke, I have decreased the number of cigarettes that I smoke daily" (P9). Another step patients take after experiencing complications is purchasing cigarettes with lower nicotine levels. One patient explained, "I cannot completely quit smoking, but the cigarettes I now smoke are less harmful, as they contain less nicotine" (P2).

5. Discussion

The aim of this study was to explain self-care behaviors in patients with essential hypertension. "Yo-yo-like" self-care behaviors were identified as the main concept. Based on the experiences of patients with essential hypertension, these patients exhibit fluctuating self-care behaviors. The experiences of patients in this study regarding self-care behaviors align with the health belief model. According to this model, when patients comprehend the seriousness of the disease and its consequences, they are more likely to engage in healthy behaviors and adhere to them (31). In our study, the perceived threat of dangerous and debilitating complications of hypertension was associated with better adherence and a return to health behaviors. However, as the disease gradually subsides, patients' adherence to self-care behaviors decreases because they feel less threatened by the risks of the disease. Soldan et al. also explained that patients facing the consequences of poor adherence to antihypertensive medication have an experience similar to a wake-up call, often leading to better adherence to recommended treatment and care (32). Continuous adherence to antihypertensive medications and lifestyle changes is associated with feelings of fatigue for hypertensive patients (33). It seems that the fluctuations observed in the self-care behaviors of these patients can also be related to these feelings.

The first category extracted in our study was the fluctuating pattern in medication adherence. Chen et al. categorized medication adherence in patients with chronic diseases as complete adherence, non-adherence, and fluctuating adherence (34). Based on the experiences of patients in our study, it can be concluded that patients with high blood pressure mostly exhibit fluctuating adherence. Many studies have focused on external factors such as financial problems, drug shortages, and the quality of health services as barriers to medication adherence for hypertensive patients (35, 36). However, the role of internal factors, particularly patients' perceptions of their disease, has received less attention. One of the limited studies in this area is the study by Edward et al., which also indicates that patients tend to neglect taking their medication when they feel better and show better adherence when they perceive the severity of the disease (37). Despite numerous interventions, medication adherence among hypertensive patients still faces many challenges (38). Therefore, it is essential to further explore patients' feelings towards hypertension and adherence to self-care to accurately identify and address any existing barriers.

The second category extracted in our study was the fluctuating pattern in dietary adherence. Loayza-Castro et al. also reported that the lifestyle, particularly the dietary habits of hypertensive patients, fluctuates over the long term (39). Macquart de Terline et al. identified poor adherence to limiting salt as one of the main challenges for patients with hypertension. Their study also revealed that patients with poor dietary adherence often struggled with medication adherence as well (40). Our study found that fluctuations in one aspect of self-care behavior are typically mirrored in other self-care behaviors of patients. Therefore, if nurses notice during their assessment that hypertensive patients are struggling in one aspect of self-care, it is important to investigate other aspects of their behavior as well.

The third category in this study focused on the fluctuating pattern in exercise. Patients gradually reduced or stopped exercising with illogical justifications. Naheed et al. also emphasized the varying levels of exercise adherence among patients with high blood pressure, noting that patients tended to decrease their adherence due to minor restrictions, such as rainy seasons (41). However, following the negative outcomes of reduced exercise, patients in our study made efforts to overcome these limitations and resume regular exercise, albeit temporarily.

In the final part of the results, a category of fluctuating pattern in smoking was identified. Singh and Dixit discussed the challenges patients face when trying to quit smoking, noting that many patients, after unsuccessful attempts to quit, switched to a form of smoking they believed to be less harmful. This behavior was highlighted as a barrier to smoking cessation in cardiovascular patients (42). Similarly, the hypertensive patients in our study reported comparable experiences. Patients quit smoking when they perceived the risks of

side effects but resumed smoking once those concerns faded. Additionally, patients believed that reducing cigarette or nicotine consumption was an effective way to manage their disease. Therefore, in addition to the fluctuating pattern observed, it is important to consider patients' misconceptions about the harmlessness of certain cigarettes.

Vallis et al. reported that when investigating the causes of people's unstable behavior, it is important to consider not only external factors such as available support and resources but also internal and emotional factors. Human behaviors are influenced by perceived emotions and feelings. The behaviors that individuals exhibit in maintaining self-care are not always linear. Unstable experiences can serve as learning opportunities, providing valuable insights into obstacles to sustainability (43). In our study, adherence to self-care behaviors among hypertensive patients was also found to be nonlinear. The patients' feelings about their condition were closely linked to whether they adhered to or neglected their self-care. Through the experiences of these patients, we learned that instability can be a valuable learning experience for the patients themselves. Patients often realize that their condition worsens during periods of instability, which can lead to dangerous complications. This realization can motivate them to return to full adherence. Healthcare workers should pay attention to and reinforce this valuable understanding in patients to break the cycle of fluctuating adherence at critical points. When patients understand the risks associated with their illness, this awareness should be reinforced to prevent them from reverting to unstable self-care behaviors. Ultimately, this leads to better control of high blood pressure in these patients.

5.1. Limitations

In this study, all participants were from the same province, which may affect the transferability of the results, a common limitation in qualitative research.

5.2. Conclusions

The findings of this study provide a comprehensive understanding of self-care behaviors in patients with essential hypertension. The self-care experiences of these patients suggest that when faced with elevated blood pressure levels, they perceive the threat of potentially dangerous complications and consistently adhere to self-care. As high blood pressure subsides, patients gradually feel more relieved about the disease and its complications, leading to decreased adherence. Consequently, fluctuations in self-care behaviors are observed. Sustained self-care behaviors play a crucial role in the management of hypertension. Based on the results of this study, it is suggested that interventions be implemented to reduce self-care fluctuations in future studies. These interventions can include patient education focused on adhering to self-care practices even when feeling healthy. Additionally, counseling sessions to help patients better understand the emotions and feelings involved in self-care may also be beneficial.

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Footnotes

Authors' Contribution: Study concept and design: M. R. A. and M. A.; Analysis and interpretation of data: M. R. A., M. A., H. B., and E. M.; Drafting of the manuscript: M. A.; Critical revision of the manuscript for important intellectual content: M. R. A., H. B., and E. M.

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Data Availability: The dataset presented in the study is available on request from the corresponding author during submission or after publication. The data are not publicly available due to privacy protection and ethical considerations.

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