ORIGINAL ARTICLE

Understanding Non-Adherence to Treatment in Hypertension: A Qualitative Study

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ABSTRACT

Background: Hypertension is a major public health issue. With regard to the current trend, it has been estimated that one out of three people will be suffering from hypertension by 2025. This study was designed to provide a better insight into the adherence to treatment and its underlying reasons.

Methods: A directed qualitative content analysis approach was conducted in collaboration with 35 hypertensive patients and 3 cardiologists in the form of in-depth interviews and focused group discussions from October 2015 to February 2016. Sampling was carried out from patients with hypertension using purposeful and heterogeneous method. Some of the PRECEDE model structures were applied as the conceptual framework.

Results: The reasons affecting adherence to hypertension treatment were analyzed in three general categories of predisposing, enabling and reinforcing factors based on the model structures. Factors such as "knowledge", "belief and attitude", "mental-personality traits", "culture and lifestyle" were classified as the predisposing factors category. "Access to health service" and "access to facilities in the workplace, home and society" were fit in the enabling factor category. The reinforcing factors category addresses "individuals' internal incentives" and "family and health service providers' support".

Conclusion: Several reasons account for non-adherence to treatment in hypertensive patients. Diversity of these reasons is an indication that design and implementation of different kinds of interventions are required in order to increase the patients' awareness, empower them and encourage self-efficacy.

KEYWORDS: Hypertension, Qualitative research, Patient compliance, Treatment adherence

INTRODUCTION

Since the number of people affected by blood pressure is on the rise, the slogan chosen by WHO in 2013 was "control your blood pressure". The incidence varies from 13.2 to 38.3 (percentage among men) in different countries. Low-income countries have the highest rate of hypertension, whereas in high-income countries with public health interventions, the prevalence has decreased. Considering the current trend, it is expected that 29 percent of the whole world population will be suffering from hypertension by 2025.[1]

Each year, 17 million deaths occur due to cardiovascular diseases, of which 9 million are related to hypertension. Worldwide, hypertension is believed to be the cause of 13.5% of premature deaths and 6% of lost years of life due to death or disability known as DALYs (Disability Adjusted Life Years).[2] Untreated hypertension can lead to adverse outcomes such as: heart and artery damage, stroke, vision loss, kidney damage, dementia and eventually death. Recent assessments of hypertension have revealed that it is the cause of around 2 million hemorrhagic stroke cases, 1.5 million ischemic stroke cases, and 4.9 million ischemic heart disease cases.[2-4]

Poor adherence to hypertension treatment is the most important cause of complications.[3] Adherence means the use of medication orders and non-pharmacological advice for the duration that the physician recommends. Its effect on the management of chronic diseases, including hypertension, has been well documented in numerous studies. Despite effective medical and non-pharmacological treatments used for hypertension management, which have been proven to be truly effective, it is not yet in a desirable condition.[5] Different studies have shown an adherence to the pharmacological treatment of 30 to 50 percent.[3] The causes of this difference in the rates have been attributed to such factors as study groups, duration of follow up, duration of evaluation, type of medication, and medication regimen.

The rate is the same as that found in non-pharmacological treatments.[6]

This directed content analysis study was designed to identify the factors for non-adherence to treatment based on the hypertensive patients' and physicians' experiences. In order to achieve this goal, we applied some of the structures of the PRECEDE model (Predisposing, Enabling, Reinforcing). The findings of this study will be used to design educational intervention for improving adherence to treatment in hypertensive patients.[7] Therefore, in the community where an intervention is going to be done, it is necessary to realize the real needs from those identified in previous studies or new ones.

MATERIALS AND METHODS

In this qualitative directed content analysis study, perspectives and experiences of people diagnosed with hypertension were studied. Moreover, the structures of educational diagnosis and the evaluation phase of PRECEDE model were used. Predisposing, Enabling and Reinforcing structures were applied when designing the interview guide questions and during the data analysis.

Participants were composed of 35 patients afflicted with hypertension and 3 cardiologists. Inclusion criteria were patients diagnosed with hypertension for at least one year. The patients were selected through purposeful sampling and heterogeneous method. Exclusion criteria were the presence of other cardiovascular diseases, diabetes mellitus and physical disability. Among the patients who seem to care enough about their treatment, 18 were selected from those who had been referred to the public clinic of the Tehran Heart Center to determine the factors that contribute to their better adherence to treatment. 17 cases were selected from hypertensive patients who had not been referred to any health centers for a regular checkup and treatment. It appears that treatment and adherence to it have no importance for them. The patients were then

interviewed. Of the three cardiologists that participated in this study, two were working in a public clinic and the other one was from a private clinic. They were all involved in hypertension treatment.

Participants' opinions were collected in the form of 25 in-depth interviews (N=3 with physician, N=22 with patients) and two focus group discussions with patients in groups of six to seven. Interviews were carried out by the first author. While introducing himself and the purpose of the discussion, the facilitator asked the participants to introduce themselves to other participants and express their views clearly and without any consideration regarding the questions and the comments of the other participants. The participants were assured that there would be no mention of their names and identities anywhere. Another person was present as a note taker at all meetings. The facilitator did not apply the attitudes, views, approvals or rejections of the content provided by the participants. These cases were also applied to individual in-depth interviews.The locations of the interviews were chosen based on the willingness of the participants, and could be in a room at the hospital, in their homes or at a workplace. The time allotted for each interview was between 30 and 90 minutes and 90 minutes for the focus group discussion. Interviews were recorded with the permission of patients. A written consent was obtained from all participants before the study began. A total of 17 patients had no desire to have their interviews recorded. Therefore, their experiences and views were recorded by taking notes. Data were collected from the 27th of October 2015 to 7th of February 2016. This study was approved by Ethics Committee of Tehran University of Medical Sciences, under the number IR.TUMS.REC.1394.872 on 4 October 2015.

A semi-structured questionnaire was used to interview the patients and physicians. The patients' interview guide contained the following questions: 1) What do you know about hypertension disease? 2) What is your experience with hypertension? 3) Do you know the aim of hypertension treatment? What do you know about hypertension treatment? 4) Do you know the complications of this disease? 5) How do you assess the level of your adherence to treatment? 6) What facilities do you need in order to manage your blood pressure?, and 7) What barriers do you think can affect adherence to treatment? The physicians' interview guide contained the following questions: 1) How do you assess the patients' information on hypertension and its complications? 2) Do patients know the aim of their treatment? 3) How would you assess the patients' adherence to treatment? and 4) What barriers do you think can affect adherence to treatment?

Data collection continued up to the saturation level. Prior to the last two interviews, the findings were saturated according to two of the research team involved in coding, but the other two interviews were arranged to ensure that the interviewer's opinion was confirmed. Interviews were transcribed word by word in the MS Word file. In order to manage and handle the data, the qualitative analysis was carried out by OpenCode software (OpenCode 4.02, 2011 at Umea University, Sweden).Text analysis was done by reading the texts and assigning the appropriate conceptual word in the form of the codes to each part of the text. The extracted codes were reviewed by the research team and corrected based on the comments. A total of 37 extracted codes were classified into 3 main structures of the model as the main categories and 10 sub-categories.

To ensure credibility and dependability of this study, we used methods of audio recording, bracketing, member checking, investigator triangulating, data source triangulating, and transferability. For deeper understanding of the subjects and ensure the findings, the two sources of data including patients and doctors were used (data source triangulation). To apply bracketing, a person other than the interviewer of the research team performed the initial coding. He was also careful not to put his point of view into analysis. To ensure

the correct coding, as well as the agreement of the coding, we coded and evaluated the data by two researchers separately (investigator triangulation). After each interview, the points made by the participants and the summary of their statements were repeated for them by the interviewer in order to be completed and approved by them (member checking). The selected treatment center is a referral center, with patients from all around the city and other cities as well (Transferability).[8] In addition, patients who had not had a regular visit to health centers were also selected from Tehran. This group was chosen by the snowball method. Because of its conditions, Tehran has a population of all ethnicities and social levels. Therefore, it seems that the results can be generalized.

RESULTS

Participants were patients aged 30 to 65 years with a mean of 45±8 years. The mean duration of the participants' involvement was 7±4.8 years (Table 1).

In order to learn more about the experience that hypertensive patients have from their disease, adherence to treatment behavior and factors influencing their adherence. we classified the participants' points of view into 3 general categories according to some of the model's structure: predisposing factors (4 subcategories), enabling factors (2 subcategories) and reinforcing factors (3 subcategories) (Table 2).

Table 1: Demographic characteristic of patients

Variables	Mean±SD
Age(years)(range 30-65)	45±8
History of hypertension(years)(Range 1-20)	7±4.8
Sex	N (%)
Male	17 (48.6)
Female	0 (0)
Living status	
Live alone	10 (28.6)
Live with family	25 (71.4)
Educational status	
Under diploma	8 (22.8)
Diploma	21 (60.0)
Bachelor	6 (17.1)

1) Predisposing Factors
1.a) Knowledge

Physicians believe that having enough knowledge about the disease and treatment is the prerequisite of adherence to the treatment recommended to patients. *"Complications of hypertension are less likely to occur in patients who have better information. (Physician, Male-38Y/O)"* The findings showed that patients do not have enough knowledge about hypertension, its causes, and its pharmacological and non-pharmacological treatments. For example, many of patients had no correct definition of hypertension. *"I think systolic and diastolic blood pressures are associated with the heart and brain. Systolic pressure is related to the heart and diastolic to the brain. (Patient, Male-51Y/O)"* Physicians assume that hypertension in most cases has no symptoms. *"Due to lack of enough knowledge, those patients who have no symptoms and find*

Table 2: List of categories, subcategories and codes

Category	Subcategory	Number of Code
1. Predisposing factors	a) Knowledge	5
	b) Attitude and belief	6
	-The disease nature and treatment	
	-Medication and non-pharmacological treatments	
	c) Mental-personality traits	3
	d) Culture & lifestyle	2
2. Enabling factors	a) Access to service providing system	4
	b) Access to facilities at home, workplace, and society	7
3. Reinforcing factors	a) Individual's internal incentives	2
	b) Family support	5
	c) Health service providers' support	3

out about their hypertension by measuring their blood pressure, do not adhere to their treatment properly and consider it as a luxury item. (Physician, Male- 44Y/O)"

Most patients had incomplete information about non-pharmacological treatments; for instance, they did not have exact information about the allowable amount of salt and fat permitted to be consumed. This ambiguity about the amount and type of diet was also raised by doctors. *"In my opinion, "diet" is a vague term about which we have no idea. Whenever we ask a patient to follow a low-fat diet, I don't know how much fat needs to be taken in. (Physician, Male-51Y/O)"*

1. b) Attitude and Belief
1. b. 1) The Disease Nature and Treatment

Hypertension often has no severe symptoms and its complications occur in the long-term, for which lifelong treatment is required. *"I feel that hypertension is not a disease. It doesn't hurt. At most, it causes headache. (Patient, Male-47Y/O)" "Hypertension complications don't occur anytime soon, who knows? Maybe I'll die long before I'll have a stroke.(Patient, Male-52Y/O)"* Participants' point of view indicated that poor adherence to treatment results from the existence of such features. From the physicians' perspective, lack of annoying symptoms leads to lack of attention to the disease and its treatment. Patients are often referred to them when they are suffering from some of the complications. Physicians believe that most patients do not consider hypertension as a severe life-threatening disease. Sometimes complications occur long after the beginning of hypertension. *"Some patients say that hypertension is not a dangerous disease. Doctors tend to exaggerate it. (Physician, Male-51Y/O)"*

1. b.2) Medication and Non-Pharmacological Treatments

Participants have different points of view about treatment. Some believed that medical treatment would be enough. *"The important*

thing is the medication that I take. Nothing else is important. (Patient, Male, 48Y/O)"*, whereas some thought that non-pharmacological treatment would be efficient and believed that chemical drugs are highly hazardous and preferred traditional medications. *"I just exercise and have a regimen. I feel it's better. (Patient, Male, 30Y/O)"; "After all, chemical medications are poisonous.(Patient, Female, 57Y/O)"*. A few participants believed in adherence to both pharmacological and non-pharmacological treatments for managing hypertension.

Based on the patients and physicians' opinion, polytherapy and multiple doses are contributing factors to poor adherence to the treatment. *"In order to treat hypertension, some patients need to take 2 or 3 medications. This group of patients often neglects the treatment. (Physician, Male-44Y/O)"*

Participants are of the opinion that comorbidity will make the problem of adherence treatment more complicated. *"I'm suffering from other diseases, too. I've got to take lots of tablets every day. I get tired. I just take half of them. (Patient, Female, 57 Y/O)"*

1.c) Mental and Personality Traits

Some personality traits such as poor self-efficacy, lack of willpower, and anxiety were noted by many patients as important factors contributing to poor adherence to treatment. *"I've got a strong willpower. I quit smoking after 22 years. There are lots of things I don't do and eat. (Patient, Male, 52 Y/O)"*

Lack of self-efficacy was considered as a factor contributing to non-adherence to both medical treatments such as taking medications on time and non-pharmacological treatment, for example restraint while exposed to harmful food and the regular measurement of their blood pressure, *"I can't take my blood pressure myself; I've got to wait for my children to come and measure it. (Patient, Female, 61Y/O)"*, or having a balanced diet, weight loss and regular physical activities. *"I don't think I'll be able to lose weight. (Patient, Male, 54Y/O)"*

Some patients suffer from great stress and anxiety which prevents them from measuring their blood pressure regularly and participating in the follow-up treatments. *"I never measure my blood pressure at home. I don't want to know that it's high because I get stressed out. (Patient, Female, 65Y/O)."* From their perspective, regular follow up treatment would be a permanent reminder of their sickness and causes a sense of threat.

1.d) Culture and Life Style

According to the participants' opinion, cultural factors such as dietary habits, the internalization of health behaviors in childhood and urban life considerably influence adherence to treatment, specifically non-pharmacological treatment.

Lack of a preventive culture in the society was mentioned by patients and physicians. *"The majority of our people don't pay any attention to disease prevention. (Physician, Male-51Y/O)"* They believed that the prevailing culture is disease-oriented and patients turn to treatment after affliction with the disease. *"Unfortunately, we haven't been raised to take care of ourselves and adopt a good lifestyle or be watchful so as not to be affected by complications. We just turn to treatment after affliction. (Patient, Female, 53Y/O)"*

2) Enabling Factors
2a) Access to Service Providing Systems

Many patients tend to seek care from public health centers. In spite of being crowded and having to wait in long queues at these centers, they are still preferred, largely due to their lower medical care expenses. *"Public health centers are crowded and I've gotten an appointment for once a year only. (Patient, Male, 48Y/O)"; "Private centers are so expensive. (Patient, Male, 55Y/O)"*

2.b) Access to Facilities at Home, Workplace, and Society

In order to develop the behavior of adherence to treatment, especially non-pharmacological treatments, access to some essentials was proposed by nearly all participants. Access to the manometer and low-salt and low-fat food at home were the points brought up by the participants. From the participants' points of view, access to safe and suitable places for sporting activities, healthy and appropriate foods (low fat and salt) in the workplace was important. *"I have to have my meals in my workplace. Foods served there are salty and fatty, too. (Patient, Male, 38Y/O)"*

Many participants complained about lack of satisfactory commercial products. *"Food items produced by factories are full of salt and fat and there is too little variety. We have limited options (Patient, Female, 44Y/O)".*

Furthermore, there aren't enough healthy foods in restaurants which fit hypertensive patients' diet. It can result in poor adherence to non-pharmacological treatments outside home. *"Most foods served in restaurants are loaded with salt and fat; that's why you can't stick to your diet even if you want to. (Patient, Female, 44Y/O)"*

They made suggestions implying government support in the form of supervision on organizations, such as food industries, restaurants and caterers to provide foods and food items that match this group of patients' diet (low salt and fat). *"The restaurants' authorities should support patients like us and do something for us. Because there are a large number of hypertensive patients in our society. (Patient, Male, 61Y/O)"*

3) Reinforcing Factors
3.a) Individual's Internal Incentives

According to some patients' statements, having witnessed improvement in their health conditions and lack of annoying symptoms was a motivation to continue and adhere to treatment. *"Do you know why I try to follow the treatment properly? Whenever I take my medications and follow the recommendations, I feel much better and I don't suffer from shortness of breath anymore.(Patient, Male, 46Y/O)"*

3.b) Family Support

Nearly all participants mentioned the positive effect of family support on adopting appropriate health behaviors such as smoking cessation, weight loss, following a proper diet, regular measurement of blood pressure, periodic medical visits, exercise and drug consumption. *"My spouse considers the allowable amount of salt, fat and suitable food items that I can eat. (Patient, Female, 61Y/O)"*

The impact of family support on adherence to pharmacological treatment is more noticeable.

"My family members encourage me to take my medications regularly. They remind me of the time I need to take them. (Patient, Male, 38Y/O)"

Those who had less family support, especially men, experienced more problems in following their diet and other recommendations. *"My wife doesn't cook diet food because my children don't like it and I don't get a separate diet dish.(Patient, Male, 54Y/O)"*

3c) Health Service Providers' Support

Most patients in this research complained about the lack of emotional support (trust, approval, encouragement, and care) and informational support from physicians. *"They just visit you quickly. There's no time for asking and answering questions. (Patient, Female, 52Y/O)"*

A good relationship between physicians and patients is what patients believe can result in obtaining accurate information about their disease and problems. Physicians who were part of this research confirmed some of the patients' points of view and thought that lack of effective communication between physicians and patients had the following consequences: patients are not informed about the importance of their illness and its treatment; patients' confidence in the health system lowered, and they give up the treatment. *"We don't want to spend too much time explaining the mechanism of the disease and the affecting factors. We just take the pressure, provide them with the prescription*

and ask them to come back again in another time. Since they are not quite clear on their disease, they think we ask them to come back again just to get another fee. (Physician, Male-44Y/O)"

DISCUSSION

This study aimed to identify the factors affecting adherence to treatment of hypertension. The findings of this study showed that predisposing factors which can influence adherence to treatment consist of individual factors such as knowledge about the disease and attitude toward it, the patient's personality characteristics, and cultural factors. Access to a service providing system and appropriate facilities enable the person to continue the treatment, and internal incentives and the support of family and health care providers are the factors that reinforce adherence to treatment behavior.

Among the behavioral predisposing factors, the role of knowledge is important and can create the right and constructive attitude. The findings of this study show that shortage of sufficient knowledge about the nature of the disease, symptoms, complications and treatment methods as well as wrong beliefs toward them are the significant factors that account for non-adherence to treatment. Studies carried out in other countries suggest similar findings. The systematic review that has studied the causes of non-adherence to treatment in 16 countries showed that ignorance of the causes and symptoms can lead to intentional discontinuation of treatment by patients. Patients think that, by the elimination of symptoms, blood pressure would return to its normal level and there would be no need to continue the treatment. In fact, because of the concern about the side effects of drugs, most patients don't have any inclination to take their medications. These findings are consistent in different countries with different levels of development and races.[9] In a meta-synthesis in South Asian countries, the role of patients' inaccurate beliefs about the current chemical and traditional treatments was also

demonstrated.[10]

Food culture and lifestyle are also influential factors. The culture of salt consumption is a typical example of it. One of the recognized causes of the occurrence and intensification of blood pressure is the amount of salt consumed.[11, 12] The average consumption of salt is 10 to 15 gram a day in Iran, which is about two to three times as much as the global standard.[13] The average consumption in different countries varies from less than 4 gram in Alaskan Eskimo to 26.3 gram in North Japan.[11, 14] According to the participants' opinions, the consumption of a large amount of salt as part of the culture and food habits in Iran makes it difficult to adhere to a proper diet and follow it at home and other environments, such as restaurants and canteens. Moreover, another study indicates that incongruity between people's food culture and useful regimens for hypertension and low-salt diets makes it difficult for patients to adhere to treatment.[15]

The present study showed that supporting patients can strengthen adherence to treatment. Family support, service providers' and the government's support are factors that can enhance adherence to treatment. Internal incentives and external support such as encouragement and tangible emotional family support to encourage taking medications regularly, following up a healthy diet and leading a healthy lifestyle seem to be efficient. Furthermore, patients' support by service providers -of which the most important part is effective communication between the doctor and patient- can influence adherence to treatment. Several studies have shown that family support plays an important role in the patients' adherence to treatment of chronic diseases and self-care.[16-20]

A review conducted on the interventions which can increase hypertensive patients' adherence to treatment suggests that those who educate and empower patients have often been effective in increasing the patients' adherence to treatment.[9] Moreover, in order to raise awareness and encourage people to consume less salt, which is an important risk factor for hypertension and heart disease, interventions in the form of campaigns have been held in many countries. For example, the UK campaign was conducted in 2003.[14] Other campaigns in Finland and Japan respectively in 1975 and 1960-1970 led to a reduction in systolic blood pressure of at least 10 mmHg and 75-80% in the rate of heart attack in Finland as well as a decline in salt consumption from 18 to 14 grams a day in Japan; consequently, hypertension and heart attack mortality rate dropped by 80% and 63%, respectively.[14]

Governments' support in the form of measures and provision of adherence to treatment are the enabling factors for adhering to treatment. Moreover, providing suitable conditions for showing appropriate treatment behavior is a necessity. On the other hand, interventions well beyond the individual level have been conducted in order to lay the foundation for better adherence by some countries. For instance, food industries in Finland were encouraged to produce low-salt products and following that the ministries of trade, industry, social affairs, and health set some rules which required food industries to attach the label on all food products including information about the amount of salt. These measures led to a reduction in salt intake by one third within 30 years followed by a 75-80 percent reduction in stroke and mortality rate and an increase in life expectancy by 5-6 years. Policies on providing affordable low-salt foods and requirements that need to be met for producing low-salt food for children are among the measures that have been taken to reduce salt consumption in the society.[14, 21-23]

One of the strengths of this study is the identification of the factors influencing adherence to treatment that take into account the views of two groups of hypertensive patients. Patients who visit health centers seem to have a better adherence than those who are less likely to receive treatment and do not refer to physicians despite the diagnosis of the disease. Doctors participating in this study

are also involved in hypertension treatment. On the other hand, the fact that only the viewpoints of the patients in Tehran have been used in this study could be considered as a limitation.

Conclusion

Several factors at various levels including individual, family, and community are known to affect adherence to hypertension treatment. Measures are required to be taken to remove the barriers at each level. Diversity of these reasons is an indication that design and implementation of different kinds of interventions for increasing the patients' awareness, empowerment and self-efficacy is necessary. Providing facilities in the society, industries, trades, workplace, and family would enable the patients to adhere to treatment, and supportive interventions at individual, family and community level could reinforce the treatment behavior.

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