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# Barriers to medication adherence in patients with hypertension: A qualitative study

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## Abstract:

**INTRODUCTION:** Barriers to medication adherence in patients with hypertension can have significant differences that made researchers confuse to conclude that medication adherence is required to be more explored, and then, beneficial interventions develop to decrease these barriers. Thus, the current study was aimed to identify barriers to adherence in Iranian society.

**MATERIALS AND METHODS:** A qualitative content analysis was carried out. Participants were as follow: Patients with hypertension who had clinic records in the health centers of Isfahan University of Medical Science. Purposive sampling method was conducted and continued until data saturation, as well. Semi-structured interview was selected as the best-qualified technique to select data. Data were analyzed using qualitative content, constant comparative analysis, and MAXQDA (Ver 10) software.

**RESULTS:** After study and separation of basic concepts, 1620 basic codes were extracted from interviews. Classes were made based on codes and after multiple reviews, summarizing as well as similarity. Primary themes were identified using more explorations and comparison of classes. Based on the nature, the conceptual themes were named. These themes include (1) environmental challenges of life, (2) incompatibility of patients; (3) forget to take medicine, and (4) inefficient recommendations of family.

**CONCLUSION:** Findings revealed that barriers to patient adherence to the treatment had four dimensions that may be likely useful for managers and planners in the health field to plan and intervene regarding medication adherence as the most critical preventing factor for patients with hypertension.

## Keywords:

Barriers, hypertension, medication adherence, qualitative study

## Introduction

Hypertension makes people exposed to the development of cardiovascular complications and kidney failure and leads to a significant increase in mortality. This ultimately results in very high costs. There are various strategies to achieve therapeutic goals in hypertension that include lifestyle modification, general strategies, treatment follow-up, and blood pressure control.<sup>[1,2]</sup> The pharmacotherapy approach is one of the basic approaches for hypertension control, and low blood pressure medications are among the most commonly prescribed

medications by physicians.<sup>[3,4]</sup> Evidence and the studies conducted in this area have shown that the treatment of hypertension by means of antihypertensive medication can reduce diastolic blood pressure by 5–6 mmHg and thereby, this can reduce the risk of coronary artery disease by 20%–25% and reduce the risk of stroke by 35%–40%.<sup>[5]</sup>

Despite the availability of a variety of different medications in the treatment of hypertension whose efficiency has been proven, the reported levels of blood pressure control are very disappointing. This has converted the high blood pressure control into one of the major health challenges. It is estimated that about 50% of the patients for

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whom antihypertensive medications are prescribed will stop treatment within 1 year.<sup>[6,7]</sup>

Studies indicate that the conduct of interventions for the increase of medication adherence is among the key issues in health systems toward controlling the cost of health care. Due to the large number of key factors and challenges, the multifaceted nature of medication adherence has made the conduct of interventions on the improved adherence to medical treatment a highly complex task.<sup>[4]</sup>

Since barriers to medication adherence in patients with hypertension can be available in different communities as well as among different people, many researchers have come to the conclusion that barriers to medication adherence among the patients in the society should be investigated through objective methods. Accordingly, pertinent interventions should be designed to reduce these barriers. The studies conducted in this area also argue that it is required to carry out qualitative research to facilitate the identification of the leading factors in line with patients' needs for effective interventions due to the complexity of adherence to treatment.<sup>[8,9]</sup> Accordingly, it is necessary to examine the barriers to medication adherence through a holistic and qualitative approach in the real environment. Given that the research process is based on the main research question, i.e., "What are the barriers to medication adherence in patients with hypertension?," the most appropriate method for this study is a method that can perceive the nature of a phenomenon in its natural context, along with the structure, process, and the factors affecting its formation. This study aimed to identify the barriers to medication adherence in patients with hypertension in a qualitative study.

## Materials and Methods

This is a qualitative study that has been carried out using content analysis. The research environment in this study included the health centers affiliated to Isfahan University of Medical Sciences (Iran). In this study, purposive sampling (marginal) was used to select the participants and sampling continued until the saturation of the data. The criteria for the selection of the patients participating in this study included the definite diagnosis of the disease by the physician, having a medical history and file at the health center, being willing to participate in the study, and not suffering dementia. The first participant was selected with a 15-year history of hypertension and the information gathered from this interview helped with the selection of the next participant. After the emergence of the first classes, the selection of the next participant was based on the question of how much s/he could help with higher clarification of the emerging classes. This

sampling procedure continued up to the saturation of the data. In the study, following the interview with sixteen participants, data saturation was obtained in practice, and the early classes were formed. However, two other interviews were conducted to gain a higher level of certainty but no new information was received in such a way that it would lead to the coding and the formation of new classes. Therefore, a total of 18 interviews were carried out. After obtaining the necessary permission, the researcher referred to the research environment while showing the permit and embarked on the selection of the participants based on the objective and the inclusion criteria (purposive sampling). While introducing himself and enumerating the research goals and objectives, the researcher received informed consent from the participants. Following the conduct of these initial measures and before the start of interviews, the participants were assured that all the items mentioned in the interview would remain confidential and they would be free to resign participating in the research at any time they wanted. In addition, the oral consent of the participants was taken for recording their statements. The interviews were carried out in one or two rounds in a relaxed environment and in a proper time and location considering the environmental factors, time, and conditions of the patients (tolerance) and their willingness to be interviewed individually (each interview took between 30 and 45 min). The interviews were first handwritten word by word and were transferred to the analysis software. Due to the fact that the qualitative research necessitates the researcher to get immersed in the information, the interviews were reviewed in several occasions and were reviewed for many times. The participants had been selected with maximum variation in terms of the duration of disease, age, gender, education status, and occupation.

The main method of data collection in this study was the use of deep and semi-structured interviews with open questions. In this study, the interviewer initially started the interview with general questions after receiving the demographic information. The subsequent and follow-up questions were asked based on the information provided by the participant to clarify the concept under study. The in-depth interview questions were also presented in the interview in harmony with the responses.

The collection and analysis of the data were conducted in line with the research objective in five steps as follows: the researcher's acquaintance with the data, the production of primary codes of data, search for finding the themes by reviewing the various codes extracted in the previous stages, the review of the themes, and the re-comparison of them with the data to ensure their accuracy, and the definition and naming of the themes.

The coding was done at the beginning of the study by an inductive method with the advancement of the research and identification of the contents of the deductive approach for the review was also used. Constant comparative analysis was the data analysis method used in this study, which is a way to increase the reliability and credibility of the data. All the phrases and expressions mentioned by the participants were completely transcribed word for word, and the content analysis was done on them, and they were coded. Therefore, the researcher was completely immersed in the data to achieve a new understanding or insight. At first, data analysis began with the frequent reading of the text for immersion and to find a general viewpoint. Then, the texts were read word by word to extract the codes. This is a continuous and disciplined process from the extraction of the codes to naming them. The qualitative analysis software, named MAXQDA Plus 2010 v10.4.16.1 (VERBI Company; Berlin, Germany) Multilingual, was used for the facilitation of the main stages of the research.

In this study, four criteria, including acceptability, transferability, consistency, and confirmability were used for the reliability of the study.<sup>[10]</sup>

In this study, externals check was also conducted. For this purpose, some sections of the interview text along with relevant codes and the emerging classes were sent to a number of observers to review the process of analysis and to comment on their accuracy. The use of maximum variation sampling was also given importance in this study. This sampling technique contributes to the proportion or the transferability of the findings to others or readers. Similarly, for the confirmability and auditing of the research, the researcher carefully recorded and reported the stages and process of the research process so that there would be the possibility of the research follow-up for others. This study was approved by the Research Council of Isfahan University of Medical Sciences (No. 393777).

## Results

The mean value of participants' age was equal to  $42.31 \pm 9.81$  years with the range of 23–60 years. Most of the patients had a university education. In addition, 47% of the interviewees lacked control over their blood pressure. The average duration of the disease was 7 years, and the duration of medication for reducing blood pressure was 5 years. Out of the 18 interviews, 1620 first-level codes were extracted without consideration of the overlapping and this number was reduced to 914 initial codes by considering the overlapping and merging (for more precise coding and facilitation of the research process). The barriers to medication adherence included four concepts, namely, lifestyle challenges,

patient incompatibility, forgetting of medicine use, and nonexpert advice. These concepts are always present in the disease process and reduce the patients' efforts to achieve normal living and adhere to the medication. Patients identify these factors during the adherence process and try to avoid them. This identification and these avoidance behaviors were generated gradually and overtime under the influence of the exposure of its adverse effects to the patient's life and the patient's efforts to adhere to the medication. In fact, these avoidance behaviors are reflected in the patients' experiences and interactions. The participants of this study expressed in their own experiences that there are numerous barriers to medication adherence due to environmental conditions. With the passage of time, the patients gradually became more familiar with these factors and would prefer to avoid them due to the high impact of these factors.

One of the concepts that patients referred to as a barrier to medication adherence was the lifestyle challenges. The living environment challenges refer to the problems and issues in the patient's environment, which play an important role in the patient's mental occupation and patient's avoidance of disease management and compliance with medication. The patients mentioned different problems and challenges in their living environment. These challenges generally fell into three subcategories, namely, economic problems, life responsibilities, and lack of family cooperation. These challenges became more visible, especially at the beginning of the medication adherence that required the patient's full attention to the medication and control of the disease. This considerably limited the patient's compliance with the medication and adherence to it.

Economic problems were among the main challenges for patients in low-income families. A participant in this field says:

"I tried to get both medicine and other items free of charge, but I couldn't. What shall I do for our poverty, we have no money. Well, we are not looking for it, we have no rights, nothing" (p1).

Some patients also had to take a high dose of medicines due to the availability of chronic diseases (diabetes and hypertension), and it was difficult for these patients to pay the price of this medication. In this regard, participant said:

"We are not in a good financial position. Well, it affects me very much. I need a pack of medicine for diabetes and hypertension, it is not a little money" (p7).

Another challenge of the patients' living environment is the multiplicity of responsibilities and their

incompatibility in life. Most patients had a moderate socioeconomic level and had different roles and responsibilities that could influence their attention, concentration, and efforts for the disease management and compatibility with the treatment of hypertension.

These responsibilities were more dominantly visible, especially in married individuals and women. The women's responsibility in keeping children was such that they were not ready to rest and get hospitalized even in emergencies and during acute hypertension problems. A participant in this area stated:

"For a few days, I was hospitalized and supervised until I myself came home because they did not let me, and I said that I am not important, my children want to go to school and I cannot leave them" (p 10).

The lack of cooperation on the part of the patient's family was another challenge in patients' life as a barrier to medication adherence. Despite having companions around in their lives, some patients are deprived of any kind of help and support that could affect the patients' mood and motivation. In this regard, the participants mentioned:

"Children often make stress and discomfort. They have done such a thing that I completely forgot to take my medicine. I did not want any help. Their best help is that they do not produce stress for me" (p6).

Some patients consider family-centered cooperation to be specific to the onset of the disease; they state that these aids and cooperation are reduced with the course of the illness and with the passage of time. In some cases, completely different behaviors from the beginning of the disease are received. A participant in this field says:

"In the 1<sup>st</sup> month, everyone was very careful about his/her behaviors and actions, but it then gets normal to behave completely different, perhaps to our detriment" (p5).

Patient incompatibility was another barrier. This concept refers to the reactions, incompatibilities, and conflicts of patients in the process of medication adherence. This concept has been extracted from the subclasses of psychological response at the onset of disease, dissatisfaction with the medication process, and the inability to comply with the treatment in the process of medication adherence. In the face of the illness and with the receipt of pieces of advice and treatments, the patients underwent various conflicts such as obsession. One of the patients in this area states:

"I had stress in the beginning of the illness for some time and I was obsessed with eating and taking the medicine. I was constantly saying it's salty and it annoys both me and others" (B4).

Depression was one of the common psychiatric reactions in the early stages of the disease that could have had an important role in bringing a disorder in patients' lives. A participant in this connection says:

"When the medication did not answer at first, I underwent very bad depression, some sort of disappointment, I was so frustrated, and it affected me a lot and my life was disrupted" (p 12).

Patient's fatigue from the process of medication adherence was another psychiatric reactions of patients that could have caused a sense of frustration or a lack of effort in the control and management of the disease. A participant in this regard asserts:

"I'm tired of all this care and travel now. Sometimes, I say to myself to stop it. How capable can one be to be fully concentrated? Everyone will fail with all these problems" (p8).

Dissatisfaction with medication was another incompatibilities among the patients. Some patients felt dissatisfied with taking medication or the increase of the amount of medication in the treatment process. This dissatisfaction could have been accompanied by failure to follow the instructions or reduced motivation of the patients in the medication adherence. In this connection, the participants say:

"They gave me the small-sized and large-sized pills, the fat pill, the pill for diluting the blood, I dislike them, I take them now, but I do not like, I do not want any of them now" (p11).

Another incompatibility of patients was the inability to tolerate the treatment. The poor will of patients was one of the factors that was referred to as a failure to tolerate the treatment. The participants in the area say:

"First, I did not take medications regularly, that is, I could not accept spiritually, I did not forget but I could not, I did not take them for any reason, or I only took them when I eat meals badly" (p 12).

Another barrier to medication adherence was the forgetting of the medication use in patients. One of the most common complaints in patients at the start of the diagnosis was forgetting of the medication use. A participant in this relation asserts:

"Forgetfulness is always at play, I forget to take the medication 1 day, I forget, I have blood pressure" (p8).

Nonexpert advice and recommendation was another concept of the barriers to medication adherence. The negative recommendations and experiences that

the patient's companions, including a wide range of first-class relatives to friends and unfamiliar people around the patients, played a significant role in reducing the process of medication adherence and in some cases, in noncommitment to medication adherence. These recommendations were so powerful that the patients obeyed despite the emphasis of the physician and health-care staff. The participants in this area say:

"For a while, a person said that the blood pressure pills bring gastric ulcer. I found my stomach in a bad mood. I had heard from many individuals that these blood pressure pills are not interesting and have a negative effect on the stomach. For this reason, I stopped taking them" (p2).

## Discussion

Participants in this study reported in their experiences that there are many barriers to the course of efforts for the normalization of medication given the environmental and individual circumstances. The patients pointed out that factors such as lifestyle challenges, patient incompatibility, forgetting of medicine use, and nonexpert advice were involved in barriers to medication adherence. Thus, they attempted to avoid these barriers to medication adherence.

Inappropriate financial situation and economic problems are among the important challenges of patients, which could have a deterrent effect on patients' efforts to normalize their treatment. Various studies have pointed to the role of economic factors as the patient's environmental challenges in medication adherence.<sup>[11,12]</sup> In line with this research, Piette *et al.* argued that financial problems and the preparation of treatment costs can significantly affect patient adherence to the extent that it can lead to changes in the patient's medication plan and/or the permanent discontinuation of medication in them.<sup>[13]</sup> Wu *et al.* have also referred to economic factors as one of the most important predictors of medication adherence in patients.<sup>[14]</sup>

The lack of cooperation on the part of the patient's family was one of the other barriers to medication adherence. The patient's dissatisfaction in this regard can create negative thoughts, indifference, noncompliance with medical orders, and failure to follow the treatment process, all of which can complicate the disease management as well as attempts to medication adherence. Other studies also confirm that patients' dissatisfaction with the family environment and the support received from individuals can play an important role in their quality of life and medication adherence.<sup>[15]</sup> Given that the family plays the most important role in supporting the patient, it is natural that the lack of family cooperation with,

consistency with, and attention to the patient creates the feeling in the patient that s/he is alone in confrontation with the disease and treatment, and that the family pays no attention to his/her problems in this situation. This issue can lead to disappointment, frustration, fear, and worry in the patient. Dolder believes that inconsistency in the family may affect the patient's acceptance of the disease and may interfere with the patient's ability to change the lifestyle.<sup>[8]</sup>

Patients' problems and concerns in daily life were considered among the other barriers to the process of medication adherence in hypertension. The patients stated that daily concerns and their involvement in the problems of the individuals around them have caused them to pay less attention to their treatment. This can also affect the patient's forgetfulness in taking medications. Although some studies show that social sectors and responsibilities create identity in an individual, and this sense of identity feeling can be effective in the overall process of treatment while neglecting the effects of the disease.<sup>[16]</sup> However, it appears that the large number of responsibilities in patients with hypertension may have a negative effect on the disease management.

One of the important barriers in this study was patients' incompatibility. The shock caused by fear, the impending feeling of death, lack of information and/or doubts about the future of the disease and its treatment have caused different incompatibilities in patients in many cases. In addition to the generation of depression and other psychological problems, this provides the grounds for inconsistent and abnormal behaviors in patients and impairment in the acceptance of treatment and management of the disease.

Other studies also refer to maladaptive psychological responses as one of the most common causes of chronic diseases and the cause of patients' nonacceptance of the disease treatment.<sup>[17]</sup> Psychological incompatibilities seem to be among the most common reactions to a crisis, which can play an important role in crisis management.<sup>[18]</sup> Charmaz argues that a chronic disease is a sudden and unwanted crisis and can cause a number of disturbances in the patient's life.<sup>[19]</sup> In general, different individuals exhibit different reactions in the face of the disease. Personality, psychological function, and the resources available to the individual play a major role in reducing mental disorder. It is noteworthy that the patients' reactions at the beginning of the disease are different from mental incompatibilities.<sup>[20]</sup>

Psychological incompatibilities cause changes into the physical and mental abilities of patients and reduce the patient's ability and capacity in the rate of positive and effective coping and can affect the outcome of

the treatment and the disease management. Other studies also suggest that the patients' reactions and incompatibilities can affect their therapeutic outcomes. This influence may result from bringing some changes in immunological responses and response to stress, as well as the effect on patient nutrition, reduced treatment acceptance, and reduced patient efforts to access the treatment and medicine.<sup>[21]</sup>

The forgetfulness of taking medications was another barrier to medication adherence. Many patients reported that they forgot their medications, especially in the early stages of the disease due to their daily problems. This was especially prevalent in patients taking only antihypertensive drugs. With the passage of time from the treatment and patients' efforts, it seems that the degree of medication forgetfulness in patients gets minimized. The role of patients' forgetfulness in the process of medication adherence in hypertension has been assessed in a large number of studies, and different studies have attempted to reduce this barrier by means of various strategies.<sup>[22,23]</sup>

MacLaughlin *et al.* (2005) referred to forgetfulness at old ages as a major factor in medication nonadherence; however, it seems that forgetfulness at younger ages can also be a barrier to the patient's attempt to adhere to the medication.<sup>[24]</sup> McDonald *et al.* also referred to the importance of using simple strategies to prevent patients from being oblivious in the process of medication adherence.<sup>[25]</sup>

Another barrier to medication adherence was the inconsistent information on the treatment of disease and medication use in patients. The contradictory information provided by various sources, including friends and relatives, lead to the increased stress and negative attitude toward medication in patients in such a way that the patients stopped taking medication only because of their friends' suggestions and information despite not experiencing any adverse effects of the medication. Koch *et al.* believe that complete and accurate patient information plays an important role in their behavior, especially in the control and management of the disease.<sup>[26]</sup> The access to accurate information about the basic needs of patients and their families are considered important in the course of the disease management and the normalization of treatment.<sup>[27]</sup> After the acceptance of the disease, the patients start searching and gaining information on various aspects of the disease and also the treatment. Physicians and nurses seem to be not the only source of information for patients, and patients obtain different pieces of information pertaining to their illness and treatment from other people and peers.<sup>[28]</sup> Accordingly, the role of peers and associates in providing information, as well

as encouraging the person to manage the disease and adhere to the treatment is inevitable. If these people offer inappropriate recommendations and advice inconsistent with the medical staff' recommendations, this can cause disturbances in patients.<sup>[29,30]</sup>

The selection of patients from health centers and the nonexamination of sick individuals who are referring to the private sector, as well as the low socioeconomic status of the subjects are among the limitations of this study, which need to be considered in interpreting the results.

## Conclusion

Finally, the results of this study indicated that the challenges of the living environment, patient incompatibility, medication forgetfulness, and nonexpert advice are among the most important barriers to the process of medication adherence in patients with hypertension. The findings of the present study can be used to plan effective interventions for the reduction of the mentioned barriers, the increase in medication adherence in patients with hypertension in the Iranian population.

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## Conflicts of interest

There are no conflicts of interest.

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