Original Article

Adherence Barriers to Treatment of Patients with Cardiovascular Diseases: A Qualitative Study

Abstract

Background: Adherence to treatment is highly important in the management of Cardiovascular Diseases (CVD). Barriers to effective and long-term adherence to treatment by the patient make achieving care and treatment goals challenging. The aim of this study was to identify the adherence barriers to the treatment plan in patients with CVD. **Materials and Methods:** A qualitative content analysis study was conducted to explore the experience of patients, family caregivers, and healthcare professionals (n = 35) using qualitative content analysis. The study was carried out between 2019 and 2020 in Isfahan, Iran. Purposive sampling was performed. Data collection was conducted through in-depth interviews and semi-structured until data saturation. Graneheim and Landman content analysis was performed simultaneously with data collection. **Results:** After data analysis, 3 themes and 6 categories were identified and named. Themes (and categories) include "Patients unreadiness to change" (misunderstanding of conditions and consequences and deterrence cultural practices and beliefs); "gap in healthcare services" (lack of adequate support for patients and discordance between healthcare professionals); and "limited access to healthcare services" (limited physical access and financial burden). **Conclusions:** The findings of the present study can provide a framework for healthcare professionals to employ preventive strategies, reduce disease complications, decrease unhealthy behaviours, and increase prolonged adherence to treatment recommendations in patients with CVD.

Keywords: *Barriers, cardiovascular diseases, patient adherence, qualitative research*

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Introduction

Cardiovascular Diseases (CVD) are increasingly common in the world. It was reported that their prevalence in adults over the age of 20 was 49.2% (126.9 million) in 2018, and they increase with age in both men and women.[1] Cardiovascular diseases caused 17.8 million deaths in 2017.[2] Approximately, 50% of mortality and 80% of the global burden are borne in low- and middle-income countries.[3] Studies in Iran show that CVD is the leading cause of mortality. The cardiovascular diseases account for about 46% of mortality and 20% to 23% of the disease burden in Iran.[4] This mortality is mainly due to risk factors and unhealthy behaviours.[5] In Iran, an increasing epidemic of CVD has also been reported due to cultural and socio-economic changes, increased risk factors, unhealthy lifestyle, limited access to health services, and reduced adherence to treatment.[4]

The progression rate of CVD can be reduced through lifestyle changes and adherence to recommended treatment.[6] According to the World Health Organization (WHO), adherence to treatment includes the degree to which an individual's behaviour (medication, diet, and lifestyle changes) conforms to healthcare provider's recommendations.[7] Adherence to treatment and clinical advice is crucial in CVD management. However, non-adherence is a common public health concern that can affect disease management and lead to inadequate treatment of the disease at a higher cost. Additionally, it increases the risk of cardiovascular complications, including mortality.[8] The results of studies in 27 European countries showed that the majority of patients with CVD have an unhealthy lifestyle in terms of smoking, diet, and inactivity, which can significantly affect cardiovascular risk factors.[9] The lack of adherence to medications can cause a significant percentage of CVD-related

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side effects.[10] In Iran, the results of a study reported that patients' adherence to treatment recommendations was unpleasant after coronary artery bypass grafting.[11] CVD can be associated with maladaptive psychological responses, including depression.[12] This can affect its treatment and prognosis,[13] act as a barrier to treatment, and increase the CVD risk factors.[14] Addressing nonadherence to treatment is a top priority due to the rapidly expanding global population with CVD, its clinical implications, and costs.[8]

Several studies have examined adherence to the treatment of patients with CVD. Most of these studies have focused on barriers to medication adherence. These barriers include health knowledge, maintaining independence and health expectations, socio-economic barriers[15] psychological barriers, side effects of medication, and patients' refusal.[16] Since adherence to treatment is a multifactorial phenomenon and is not dependent on one factor, those affecting adherence are often complex.[8] Due to the multidimensional nature of the treatment regimen, as well as the multicultural context of the Iranian society and the system of providing health services, a qualitative research is necessary in order to deeply understand the experiences of patients with CVD. Therefore, the aim of this study was to identify the adherence barriers to the treatment plan in patients with CVD. The result of this study may improve the current performance of healthcare professionals to remove barriers and achieve better treatment outcomes.

Materials and Methods

This qualitative content analysis study (as part of a larger project) was conducted between 2019 and 2020. A recent article has been published from this project.[17] Content analysis is a qualitative way to relate data to the main topic, and its final products are the concepts and classes that make up the topic under study.[18] This descriptive, qualitative study was undertaken to gain a deep understanding of the complex phenomenon[19] of the experiences and perceptions of patients, family caregivers, and health professionals in adherence barriers to the treatment plan in patients with CVD.

Purposive sampling was performed. Participants were 35 individuals,including 13 patients identified with CVD who referred to hospitals and health centres in the city of Isfahan, Iran; 6 family caregivers, and 16 healthcare professionals (e.g., cardiologists, general practitioners, psychiatrists, psychologists, and nurses) who worked in these settings. As healthcare professionals and those family members are in close contact with patients, their experiences and perceptions were examined to clarify and confirm their responses in cases of any ambiguity. For patients, study inclusion criterion was to have been diagnosed at least a year earlier; for family caregivers, it was to be responsible for caring for the patient; for healthcare professionals, it was to have at least 1 year of experience working with these patients. All participants also needed to be willing to

participate in the study. Exclusion criteria in this study were patients with specific psychotic disorders and comorbidities and anyone who was not willing to continue cooperation at any stage of the study.

Data were collected through face-to-face in-depth interviews and semi-structured at the appropriate place and time after stating the objectives of the study and obtaining the participants' informed consent. Each interview lasted 30 to 90 minutes and was recorded. Each started with a general question from the patients. They were asked "Please talk about your disease and treatment and state what problems and obstacles you have encountered in relation to your treatment?" Then, family caregivers were asked the question "What are your experiences and perceptions of adherence problems to the patient under your care?" Moreover, healthcare professionals were asked the question "What are your experiences and perceptions of the status and adherence barriers to the treatment of patients with CVD?" The next questions were asked specifically in relation to the given answers. Data collection continued until data saturation, meaning that it continued until all data collected were duplicates of the previous data and no new information was obtained.[20]

Data collection and analysis were performed simultaneously. The data analysis process was performed using Graneheim and Landman method. First, each interview was transcribed and reviewed several times to gain a general understanding of the text. Then, the text was divided into meaning units with related words and sentences. These units of meaning were condensed and labelled with codes. Then, the codes were classified into categories based on differences and similarities. Finally, themes were extracted as the hidden meaning of the text.[18] During data collection and analysis, any feedback and hints were recorded for future interviews. Data analysis was performed using MAXQDA 10.

For the trustworthiness of the study, Lincoln and Guba's criteria quoted by Streubert and Carpenter were used.[20] The framework includes credibility, transferability, dependability, and confirmability. Credibility was achieved through the researcher's prolonged engagement with the data through in-depth interviews and data immersion. The extracted codes and categories were presented to supervisors, consultants, and qualitative research specialists to confirm congruence with the data analysis. Some parts of the interview texts, codes, and categories were provided to the available participants to review and confirm congruence with their experiences. The transferability of the analysis was performed in similar conditions with the confirmation of codes and categories by patients who did not participate in the present study. The participants' direct quotations were provided in the research report for the dependability of the data.

Ethical considerations

This study was approved by the Medical Ethics Committee (code: IR.MUI.RESEARCH.REC.1398.353) of Isfahan University of Medical Sciences, Iran. After stating the goals, informed consent was obtained from all participants. They were reassured that the participation was voluntary, confidential, and anonymous. Participants were free to withdraw from the study at any time.

Results

The findings of this study were extracted from 35 interviews. Participants included patients with CVD (n = 13). They were between 25 and 77 years old. The duration of their disease was between 1 and 28 years. There were also family caregivers (n = 6) and healthcare professionals (n = 16) [Table 1]. After data analysis, 3 themes and 6 categories were identified and named. Themes included patients unreadiness to change, gap in healthcare services, and limited access to healthcare services [Table 2].

1. Patients unreadiness to change

Adapting to new disease conditions requires changes in various aspects of life. The findings showed that readiness was not occurred in some dimensions and was suggested as a barrier to adherence to treatment. This theme is derived from the categories of "misunderstanding of conditions and consequences" and "deterrence cultural practices and beliefs."

Misunderstanding of disease conditions and consequences

One of the most important barriers to adherence mentioned by some participants was the poor understanding of the disease condition and the seriousness of the risk, which negatively affected patients' adherence to treatment. *"The first time that I had a stroke, the doctor told me that I had to follow their instructions. But I did not take it seriously; I did not thinkthat the stroke can kill. I did not know about its side effects and consequences of the disease"* (p 1).

Some participants were unawareness of the negative consequences of the disease and the importance of adherence and lifestyle changes. *"We did not think about the consequences of the disease. We were not aware about the danger of high blood pressure! Unfortunately, we were negligent. He did not consume his medication and did not take his diet seriously. We did not go for angiography, which the doctor prescribed"* (p 19).

Deterrence cultural practices and beliefs

According to some participants, the preference of unhealthful cultural habits and beliefs was some of the barriers influencing treatment recommendations and lifestyle changes. *"The nutritionist prescribed everything to me. I only observed the first and second months; then it stopped; many foods were tasteless, we are used to foods that are fatty and salty"* (p 4).

Table 1: Demographic characteristics of the studied participants (*n*=35)

Patients		Family caregivers		Healthcare professionals	
Variable	*n* (%)	Variable	*n* (%)	Variable	*n* (%)
Gender				Gender	
Male	8 (61.54)	Male	1 (16.67)	Male	6 (37.50)
Female	5 (38.46)	Female	5 (83.33)	Female	10 (62.50)
Age				Age	
20-29	1 (7.67)	30-39	1 (16.67)	30-39	2 (12.50)
30-39	2 (15.38)	40-49	4 (66.66)	40-49	8 (50.00)
40-49	3 (30.77)	50-59	0 (0.00)	50-59	6 (37.50)
50-59	3 (23.07)	>60	1 (16.67)	>60	0 (0.00)
>60	4 (13.07)				
Level of education				the profession	3 (18.75)
Illiterate	2 (15.38)	Illiterate	0 (0.00)	Cardiologist Psychiatrist	1 (6.25)
Less than high school	3 (23.07)	Less than high school	1 (16.67)	General Practitioner	1 (6.25)
Diploma	4 (30.77)	Diploma	2 (33.33)	Psychologist	3 (18.75)
university	4 (30.77)	university	3 (50.00)	Nurse	8 (50.00)
Disease duration					
Less than 5 years	3 (23.07)				
5-10 years	4 (30.77)				
>10 years	6 (46.15)				
Underlying heart disease	5 (38.46)				
Heart failure	5 (38.45)				
Coronary art. Dis.	2 (15.38)				
Valvular heart dis.	1 (7.69)				
Cardiac arrhythmia					

Table 2: Themes, categories and subcategories extracted from content analysis

Subcategories	Categories	Themes
Poor understanding of the seriousness of the risk	Misunderstanding of conditions and consequences	Patients unreadiness to change
Unawareness of the negative consequences	Deterrence cultural practices and beliefs	
Disregarding the significant of lifestyle changes		
Preference of unhealthful cultural habits		
Tendency to Replace medication with traditional medicine practices		
Belief in divine destiny Instead of pursuing treatment		
Inadequate emotional support	Lack of adequate support for patients provided by healthcare professionals	Gap in healthcare services
Poor information support		
Failure to provide follow-up support	Discordance between healthcare professionals	
Ineffective communication with the patient		
Insufficient referrals to counselling services		
Failure to refer to rehabilitation centers		
Weak cooperation between healthcare professionals		
High costs of health care treatments	Limited physical access	Limited access to healthcare services
Patients' difficulty in affording medical bills	Financial burden	
Not having health insurance		

"Smoking makes me calm down. The doctor said you should stop smoking, but I did not quit. I got used to it" (P 20).

The participants' tendency to use complementary medicine along with their beliefs about the possibility of replacing the medication regimens with traditional alternatives and complementary treatments was associated with a poor adherence to treatment recommendations. *"Interference with traditional medicine is our problem. If patients believe that cupping therapy is good for their blood thinning, they will no longer take aspirin and instead of dieting, they will eat fat, and then use leech therapy"* (P 6).

"I have to take 7 to 8 pills a day, if I want to take it for a long time, it is like poison to my body. I think traditional medicines are less effective, but they are much less dangerous" (P 3).

Some participants refused to follow the treatment, looking at the disease as their divine destiny. *"The doctor says if you do not have a pacemaker, there is a possibility of death. But I do not want to do it. My view and our lernings are different from others. I say that life is in the hands of God; nothing happens unless God wants it"* (P 15).

2. Gap in healthcare services

This theme refers to the differences between the services provided by healthcare professionals to patients and the best practices in healthcare. This theme is extracted from the categories including "lack of adequate support for patients" and "discordance between healthcare professionals."

Lack of adequate support for patients

One of the most important barriers to adherence was the difficulty in providing services to patients and inadequacy of support by the healthcare professionals. Inadequate emotional and informative support, associated with poor adherence to treatment, was reported by some participants: *"I need consultation. I need to talk to someone. If I knew about my medications, their side effects, and diet; maybe I could handle my disease better. Doctors are always in a hurry; they do not ask about the patient's conditions, they do not answer our questions"* (P 1).

Another barrier to adherence was the ineffective communication between the healthcare professionals and patients and the receipt of conflicting information, which prevented patients from receiving adequate support. *"When the doctor does not communicate well, he/she cannot gain the patient's trust. When we ask the patient why you changed your doctor or why you did not take your medicine on time, she says that the doctor did not answer my questions or they say that the doctor's opinion is different from mine"* (P 5).

Failure to provide follow-up support and continuing contact with healthcare professionals after discharge was among the adherence barriers. *"Every few months we should ask patients to come for a visit. Talk to them and remind them of treatment recommendations. The lack of follow-up affects adherence"* (P 13).

Another point mentioned by the participants was the poor trainings on discharge. *"Discharge time training has entered the hospital accreditation. But a proper training session on diet and medication is not given at the time of discharge. This affects adherence"* (P 7).

Discordance between healthcare professionals

One of the barriers highlighted by some participants was discordance between healthcare professionals in providing services to patients including, insufficient referrals to other specialties and relevant services such as psychologists, and rehabilitation services, which affected patient's adherence and follow-up support after discharge.

"Cardiologists do not refer patients (to rehabilitation centres). If they cooperate and prescribe, the patient will accept and follow up" (P 28).

"Most doctors rely merely on medications. Some patient's problem can be solved by counselling, however, we usually refer them directly to a psychiatrist. There is no specific place in the hospital to refer to a clinical psychologist

first. Elderly patients take at least 6 to 7 pills a day. Also, some medications which cause problems are added by a psychiatrist" (P 22).

3. Limited access to healthcare services

This theme refers to the barriers and limited resources in patients' access to healthcare services and the impact of these barriers on their adherence. This theme is extracted from the categories including "limited physical access" and "financial burden."

Limited physical access

Some patients pointed to the lack of healthcare facilities and limited access to local rehabilitation centers, nutrition, and psychology counselling services. As an adherence barrier to their treatment. "*In our city, there are very few hospitals per population. There are no nutrition and psychology counselling centres. I needed nutrition counselling to tell me what to do, whatto eat, and what not to eat*" (P 3)..

"Participation in rehabilitation increases patients' adherence to treatment because we keep asking, "Are you taking medication? " Did you do your test? We control their weight. But most of them do not participate due to the distance from their place of residence"(P 29). *The overcrowded public health centres delayed and prevented some patients from making an appointment. It was another obstacle expressed by some participants. "A patient who comes in every month is reminded about his/her adherence. But treatment centres are often crowded. Patients have trouble making appointments They refer to the centres irregularly"*(P 12).

Financial burden

Economic issues were one of the most significant challenges for patients from low-income families. Financial burden and low income were among the factors that participants referred to as significant adherence barriers to treatment.

"*Rehabilitation is very useful for some patients. If we want to add rehabilitation to the cost of medicine, patients usually do not follow up (because of financial limitations)*" (P 6).

"*I have to rest. The doctor told me not to lift a kilo. I can't stand on my feet. To pay my medication, I have to work even, if I have to lie down*" (P 32).

Some participants stated that their medication cost is a significant barrier to adherence. "*I did not have any medications for a week. The cost was too high; I was hospitalized again. I often could not afford my medication; they are too expensive*" (P 10).

Another barrier to adherence to treatment was the lack of health insurance, which was reported by one of the participants. "*The role of insurance is very important. A patient who is concerned about the cost of treatment and medicine that is not supported by insurance, therefore does not adhere to treatment"* (P 13).

Discussion

This study identified adherence barriers to treatment of patients with CVD. Adaptation to chronic illness is a multidimensional concept and takes place in the physical, emotional, behavioural, cognitive, and interpersonal domains. Adaptation to the disease is a context-dependent phenomenon in which many factors, including beliefs, convictions, socio-cultural determinants, and governing structures of societies are involved in its formation. The findings showed that patients unreadiness to change, gaps in healthcare services, and limited access to healthcare services were some of the barriers that affect adherence to CVD treatment. Findings of this study show that patients experience various problems and challenges that negatively affects their lifestyle and adherence to treatment. Among these challenges were the misunderstanding of the disease condition, consequences, and the seriousness of the risk, which was consistent with the findings of the study by Forsyth *et al*.[15] In line with these findings, a systematic review examined non-adherence to hypertension treatment in 16 countries and showed that ignorance about the disease and causes and effects of hypertension led patients to intentionally discontinue their treatment. These findings were similar among ethnic and geographical groups.[21] Other evidence show that patients' perceptions of the positive benefits of lifestyle modification lead to sustainable lifestyle changes and the prevention of subsequent cardiac events.[22] Junehag *et al*.[23] reported that although patients were aware of the need for a healthy lifestyle after a heart attack, some wanted to continue their previous lifestyle. In fact, they were not motivated to change their lifestyle and resisted the change. It seems that awareness alone cannot improve treatment adherence and patients' lifestyle changes. Evidence shows that patients report conflicting feelings. Although they realize that change is essential to their health, some of them resist change. Therefore, providing professional support to patients and identifying individual training needs and assessing or addressing their resistance to change can increase their willingness to take responsibility for their health and adhere to treatment recommendations.[24]

Cultural practices and beliefs were effective barriers to change in some patients. This was an important adherence barrier to treatment recommendations. In line with these findings, another study confirms that high salt intake, as a part of poor cultural and eating habits, makes it difficult to adhere to a diet in Iran.[25] Also, Holt *et al*.[26] reported that patients refused to use medications because they believed that medications could be dangerous and addictive. The results of a meta-synthesis in South Asian countries also showed disease-related socio-cultural beliefs, including concerns about drug toxicity, and beliefs about the positive effects of traditional therapies, cast doubt on the effects and necessity of drugs prescribed to patients with CVD and diabetes.[27] It has also been confirmed that focusing

on beliefs is the most effective approach to change health behaviour and have adherence to treatment.[28] The presence of traditional medicine along with modern medicine and less side effects of traditional medicine drugs may have made it difficult for patients to adhere to the medicines. As Iran has a long history and cultural diversity, cultural beliefs and traditional lifestyle tendencies can affect patients' behaviour to change their lifestyle and adhere to treatment. Therefore, healthcare professionals should be able to identify their patients' cultural habits and beliefs and consider the barriers to adhering to lifestyle changes when counselling patients with different ethnic diversities.

The findings of this study indicated that lack of adequate support for patients provided by healthcare professionals is a barrier that play a crucial role in patients' non-adherence to treatment. Ineffective communication among the healthcare professionals, paying insufficient attention to patients' needs, and providing inadequate and contradictory information led to patients' distrust and dissatisfaction. In line with these findings, another study showed that inconsistent information received from various sources, along with increased stress and negative attitude towards treatment in patients with hypertension, led to cessation of medicine consumption.[29] Improving patients' understanding can increase adherence to treatment by increasing access to information and improving patient consultation with healthcare professionals.[30] These findings emphasize the importance of ensuring adequate access to information and good communication between patients and healthcare professionals. In this study, patients had delay in recurrence and follow-up of their treatment. Thus, they did not have the opportunity to prevent side effects. These findings are supported by another study which shows that poor coordination and discontinuity of care make it difficult for patients with heart failure to establish effective therapeutic relationships, and negatively affect the level of trust in healthcare providers.[30] Therefore, policy makers and healthcare professionals should pay attention to the importance of continuing care for patients with chronic diseases compared to acute patients.

In the present study, another barrier to patients' adherence was discordance between healthcare professionals in providing services to patients, including the referral system. Meiqari *et al.*[31] reported that due to the absent of a referral system for follow-up treatment at the clinical level, patients encounter medical disconnection, which is consistent with the findings of this study. Although Holt *et al.*[26] acknowledged that healthcare providers can have a significant impact on adherence to patient care by referring patients to training programs in the field of chronic disease management. It has been reported that physicians' engagement with other healthcare professionals, including pharmacists and nurses with specialized skills in counselling and behavioural interventions, is more effective and cost-effective in addressing adherence challenges to

treatment of cardiovascular patients.[32] Therefore, in order to remove the barriers to adherence of cardiovascular patients, physicians should not just focus on one dimension in treatment. Instead, they should have cooperation with multidisciplinary specialists and hold a holistic view towards the issue.[15] Interprofessional cooperation can remove the barriers of adherence and promote patients' self-management by strengthening their ability.[33] Thus, in addition to improving care coordination, interprofessional participation and the exchange of information between primary and secondary care services may reduce non-compliance due to current inefficiencies in the health system. Based on the findings of this study, limited physical access to healthcare services was another barrier to adherence. In this study, the lack of healthcare facilities and the difficulty in patients' access to these services near their place of residence was one of the barriers to adherence to treatment recommendations. This was in line with the findings of Ashoorkhani *et al.*[25] Moreover, Junehag *et al.*[23] reported that people with myocardial infarction needed support and had difficulty accessing standard rehabilitation programs near their neighbourhood. The results of a systematic review show that a gap between preventive and healthcare services in the health system is a significant barrier to have access to quality medical services, especially for chronic diseases.[31] It seems that interventions beyond the individual level should be developed to better adhere to patients' treatment recommendations. In the present study, financial constraints and high medication costs were identified as other barriers that made it difficult to access treatment and care services. Various studies have pointed to the role of economic factors as challenges to adherence to pharmacological treatment of cardiovascular patients.[15,16,29] Although participants had health insurance and access to medical care, medication cost was emphasized as an important factor in non-adherence.[26] Because in chronic diseases, patients have to visit multiple times to receive primary and secondary care, which might be provided in different locations, not all patients are able to use it on an equal condition. Therefore, there is a comprehensive support of healthcare providers, government systems, and policy makers and the creation of appropriate conditions to remove barriers to patients' access to health services for adherence to treatment.

One of the strengths of this study is the participation of an interprofessional team with different backgrounds that allows for the integration of multiple disciplines of views and opinions. One of the limitations of this study is its focus on the adult population. A wide range of ages, including different generations, may influence our results. While in the present study, data saturation that achieved a broader data size may bring to light other dimensions of barriers to adherence. Barriers to adherence need further investigation in relation to different aspects of patients' lives, especially in different socio-cultural contexts.

Conclusion

The findings of this study showed that adherence barriers to treatment of cardiovascular patients are multi-faceted and are unlikely to be improved by one single-faceted intervention. In summary, understanding the barriers to socio-cultural contexts, recognizing the challenges of changing lifestyles and beliefs, and recognizing patients' limitations may develop appropriate interventions, caring plan and support by policy makers and the healthcare provider, especially nurses. This my improve adherence to the treatment of patients with CVD and improve their quality of life.

Conflicts of interest

Nothing to declare.

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