Original Article

Perceptions of Patients with Diabetes Mellitus and Health Care Providers of Living with Diabetes and its Treatment and Care: A Qualitative Study

Abstract

Background: Understanding the experiences of patients and health care providers of Diabetes is considered a key element in knowing how to treat and care for the disease. However, few studies have investigated the patients' and health care providers' experiences of diabetes. This study aimed to find how patients with Diabetes and health care providers perceive living with this disease and its treatment and care. **Materials and Methods:** A descriptive exploratory qualitative research approach was conducted through individual and group interviews with 23 patients with diabetes and health care providers of Isfahan urban health centers in 2020. Purposive sampling was continued until data saturation was reached, and Interview transcripts were analyzed using the conventional content analysis method. **Results:** Overall, three themes emerged: disease control facilitators (healthy lifestyle, high levels of health literacy, self-care ability, supporting networks, and effective doctor–patient communication), disease control barriers (inadequate social support, misconceptions, patient burnout, low levels of health literacy, economic problems, inability to self-care, and the patient's non-compliance), and annoying consequences of living with diabetes (emotional and psychological problems, unpleasant experiences, and reduced quality of life). **Conclusions:** Patients with diabetes experience several facilitators and obstacles in controlling their disease and face its complications. There were many myths about treatment. Therefore, health policymakers and planners should plan health-related interventions to remove barriers to disease control and strengthen facilitators for patients with diabetes mellitus.

Keywords: *Barriers, diabetes mellitus, facilitators, perception, qualitative study*

Anahita Babak[1],
Ali Fazli[1],
Mahrokh Keshvari[2]

[1]Department of Community and Family Medicine, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran, [2]Nursing and Midwifery Care Research Center, Department of Community Health and Gerontological Nursing, School of Nursing and Midwifery, Isfahan University of Medical Sciences, Isfahan, Iran

Introduction

Diabetes Mellitus is a common global problem Diabetes was the direct cause of 1.5 million deaths in 2019, and 48% of all deaths, before the age of 70 years, occurred due to diabetes.[1] According to national statistics, in the last decade, the prevalence of diabetes in Iran has increased by about 30%, which is alarmingly higher than global estimates.[2] Despite all the problems caused by this disease and its incurability, it is believed that patients can adequately understand diabetes, raise their awareness, and perform self-care activities to control it with the help of the healthcare system.[3]

Recent research revealed that information, beliefs, and attitudes of patients about their disease are influenced by information exchanged during their conversations with the physician, the medical history of the family and other relatives, current experiences of the patient, and information obtained from social networks.[4,5] Studies have shown that working on perceived disease severity (feelings of deterioration and the importance of knowing about the disease complications of leaving the disease untreated) of diabetes can improve patients' self-care.[6,7] In addition, self-efficacy (believing in one's ability to perform the behaviors required to achieve the desired result successfully) is another crucial factor in guiding health-related behaviors and a good indicator of flexible self-care.[8] Considering that understanding the views and perceptions of health service providers and patients with diabetes is very necessary in designing effective interventions and providing high-quality health care, and Considering that diabetes is a highly prevalent and highly burdened disease with considerable complications, the control or prevention of this disease requires long-term cooperation of patients.

Moreover, many of the studies were quantitative and could not investigate the

Address for correspondence:
Dr. Mahrokh Keshvari,
Nursing and Midwifery Care Research Center, School of Nursing and Midwifery,
Isfahan University of Medical Sciences, Isfahan, Iran.
E-mail: keshvari@med.mui.ac.ir

Access this article online

Website: https://journals.lww.com/jnmr

DOI: 10.4103/ijnmr.ijnmr_52_23

Quick Response Code:

How to cite this article: Babak A, Fazli A, Keshvari M. Perceptions of patients with diabetes mellitus and health care providers of living with diabetes and its treatment and care: A qualitative study. Iran J Nurs Midwifery Res 2025;30:591-9.

Submitted: 16-Feb-2023. **Revised:** 09-Oct-2024. **Accepted:** 10-Oct-2024. **Published:** 24-Jul-2025.

depth and complexity of the viewpoints of the patients with diabetes and health care providers regarding the treatment and care of these patients. So, examining the beliefs, experiences, and perceptions of patients with diabetes and health care providers is pivotal in the treatment and care of it. Considering the importance of care in preserving the health of patients with diabetes and preventing long-term complications of diabetes, this qualitative study aimed to find how patients with diabetes and healthcare providers perceive living with this disease and its treatment and care.

Materials and Methods

This study is an exploratory Qualitative research conducted in Isfahan (a major city in Iran) in 2020. Qualitative research helps understand phenomena in their context, reveal the links between concepts and behaviors, and develop and revise theories. The conventional content analysis method was used to analyze the data. Content analysis is a systematic and repetitive qualitative method for regular behavior description and is the preferred method for analyzing semi-structured interviews.[9] The researcher conducted all interviews in health service centers. The interview location was a private and quiet place in the health service centers for the patients and the health care providers with a preconcert. Participants were selected by purposive sampling method from two groups: patients with diabetes referred to Isfahan Comprehensive Urban Health Service Centers; and health care providers, physicians, and nutritionists working in these centers. Maximum variation was considered for patients in terms of age (from 30 to 57 years), gender (three females and five males), level of education (from diploma to master's degree), and history of diabetes (from less than two years to more than ten years). For health care providers, the maximum variation was considered for the variables of age (from 26 to 58 years), gender (eight females and seven males), work experience (from one to 32 years), and level of education (from associate to doctorate). Inclusion criterion for health care providers was full-time employment for at least one year. The patients' inclusion criteria consisted of having a health record, and a history of diagnosed diabetes for at least one year.[10] Finally, 23 participants, including eight patients with diabetes mellitus and 15 healthcare providers, who took care of these patients and interacted closely with these patients participated in this study.

Data were collected via Semi-structured, face-to-face, and in-depth interviews, conducted either individually or in focus groups from April to September 2020 in healthcare service centers in Isfahan. Data collection was continued until data saturation. Thus, in the two last interviews, no new codes emerged and no novel idea or category was obtained. The duration of the focus group interviews ranged between 60 and 120 minutes, and the individual interviews lasted 30-60 minutes. In general, 32 interviews were conducted, 13 individual and two focus group interviews with health care providers, and 14 individual and three focus group interviews with patients. After obtaining the participants' permission and formal consent, all interviews were recorded digitally, simultaneously with two digital tape recorders, and the data were transcribed verbatim and accurately. The emotional responses and body language of the interviewees and the researcher's observations and interpretations were also recorded during and immediately after the interviews. The content of the interviews was translated and typed in Microsoft Word, to obtain a general understanding then studied several times. After that, the content of the interviews was divided into semantic units, and the primary codes were determined. Next, based on similarities and differences, the codes were placed under sub-categories and categories. Finally, the themes representing the hidden content of the interviews were created (Graneheim and Lundman, 2004). After obtaining the demographic data, the interview began with an open-ended question that was the main question of the study, i.e., "Tell us about your experience of living with diabetes/your perception of diabetes care". We allowed them to express it in their own words. As the interview progressed, the focus shifted to specific issues, and the researcher followed the interview in a semi-structured manner with probing and exploratory questions such as "What do you/your patients think caused diabetes?", "what are your symptoms when your blood sugar level rises?", "what do you/your patients do to help lower blood sugar levels?" Several specific questions were asked based on the interviewees' answers, during the interview (e.g., "Can you make it clearer with an example?").

The data were analyzed using Graneheim and Lundman's conventional content analysis method to classify the qualitative data more efficiently and achieve an appropriate abstraction level. That is, the raw data were categorized based on the researcher's valid interpretation and inference. This process used inductive reasoning, resulting from conducting a careful examination and constant comparison of data, categories, and themes.[11,12] Each interview was a unit of analysis. The interviews were divided into meaning units, and then these units were condensed, summarized, and organized into the primary codes. The text and general context of the interview were considered when condensing and coding the meaning units. Multiple codes were compared based on differences and similarities and sorted into categories and themes. Categories were discussed and reviewed by researchers. The process of discussion and rethinking resulted in an agreement on how to arrange the codes. Finally, the basic underlying meaning, that is, the hidden content of the categories, was organized in the form of the main themes. An example of content analysis is shown in Table 1. Data analysis was performed both manually and using OneNote partitioning software. Guba and Lincoln's criteria were used to ensure the trustworthiness and consistency of the qualitative data.[13] To verify the dependability and confirmability of the data and to show the credibility of the findings, the researchers

Table 1: Examples of primary codes, categories, sub-themes, and themes derived from content analysis of the perceptions of patients with diabetes and health care providers of living with Diabetes and its treatment and care

Themes	Sub-themes	Categories	Codes
Living with diabetes has annoying consequences	Emotional & psychological problems	Constant stress and anxiety Feeling hopeless Depression and social isolation	C5P13 The patient believes in the psychological burden of the disease in life
	Unpleasant experiences of living with diabetes	Experiencing the symptoms of the disease Experiencing disease complications Experiencing the treatment side effects	C27P3 Experiencing unpleasant side effects of diabetes, including amputation
	Reduced quality of life	Decreased libido and sexual dysfunction Inability to live in harmony with others Feeling different from others Experiencing the restrictions of life Experiencing social stigma	C17P13 Patient perception of the impact of disease on sexual function C4P15 Patient perception of disgrace and shame of insulin injection by others

used the techniques of prolonged engagement and persistent observation (6 months, April 2020 – September 2020), to deal with the data and to immerse in the data, triangulation, audit trails, external check and peer debriefing, member check with four patients with diabetes and peer checks with two faculty member, and searching for disconfirming evidence. These techniques were used to ensure data credibility. The researcher tried to increase the confirmability by ignoring their thoughts and assumptions (bracketing), which came up in the process of data collection and analysis. On the other hand, the researchers tried to behave consciously at each stage of the research. This was assured by constantly reviewing the analysis and immersing in information. Also, to provide audibility, the analysis process is fully described and recorded, so that it can be fully understood by other researchers. Findings are presented as appropriate quotations to strengthen the verifiability of the study. To maximize the transferability of the findings sampling was done with maximum variation, and participants of different ages, education, socio-economic status, and experiences were included in the study. The researchers tried to provide data sets and descriptions that are rich enough so that other researchers can make judgments about the findings' transferability to different settings or contexts. Also, the generalizability of the study was ensured by providing rich data sets and descriptions, as well as external report checks.[14]

Ethical considerations

This study was approved by the ethics committee of Isfahan University of Medical Sciences with the ethics ID "IR.MUI.MED.REC.1399.549". All participants were included in the study after obtaining an informed written consent. The interviews were organized based on participants' preferences. Permission to record the interviews was obtained after assuring them of the confidentiality of the information (no name, address, national code or any personal indicator was asked) and given the right to withdraw at any time.

Results

After the analysis of the interviews, 674 primary codes were obtained. Forty-five categories, 15 sub-themes, and three main themes of "disease control facilitators," "disease control barriers," and "living with diabetes annoying consequences" were extracted after reviewing and summarizing the data [Table 2].

Disease control facilitators

Disease control facilitators refer to factors that play an essential role in controlling and treatment of this disease. This theme includes the five sub-themes of a healthy lifestyle, high levels of diabetes health literacy, self-care ability, supporting networks, and effective doctor–patient communication.

Healthy lifestyle

According to the participants, lifestyle modifications such as a healthy diet, increasing physical activity, and exercising are among the factors that help control the disease. One of the participants expressed this as; "*In my opinion, the disease can be controlled with proper exercise and diet*." (a 45-year-old female patient)

High levels of health literacy

The patient can obtain and understand basic health information needed to control diabetes. The higher the awareness of the disease, the more acceptable the disease will be. As a result, adherence to the treatment and medications and self-care improve. "*The patients should know the symptoms of hypoglycemia. When they exercise, they should know how to change their diet and insulin*." (A 48-year-old female health care provider)

Self-care ability

This sub-theme can generally be divided into patient self-management ability and high self-efficacy. In other words, the patients should be able to pursue and commit to specific goals, consider the appropriate time to perform their activities, and evaluate their performance, and receive

Table 2: Themes, sub-themes, and categories extracted from qualitative data of the patients with diabetes and health care providers perception of diabetes

Theme	Sub-theme	Category
Disease control facilitators	Healthy lifestyle	Modifying the diet and food Increasing physical activity and exercising
	High levels of health literacy related to diabetes	Early diagnosis of symptoms and complications of the disease
		Familiarity with the required care resources
	Self-care ability	Following the treatment instructions
	Supporting networks	Ability to self-assess health status
	Effective doctor–patient relationship	Self-management ability
		High self-efficacy
		Formal support networks
		Informal support networks
		Physician–patient involvement
		Physician–family involvement
		Trusting the physician's professional qualifications
Disease control barriers	Inadequate social support	Inadequate formal social support
	Misconceptions and myths	Inadequate informal support
	Patient burnout	Tendency to traditional therapy
	Low levels of health literacy	Distrust of drug treatment
	Economic problems	Misconceptions about the disease
	Inability to self-care	Simplification of the disease
	Patient's non-compliance	Feeling tired due to the chronic nature of the disease
		Stress and tension resulting from the disease
		Loss of motivation to change lifestyle
		Inability to diagnose the symptoms and complications of the disease timely
		Lack of familiarity with the required care resources
		Failure to follow treatment instructions
		Inability to self-assess health status
		Insufficient income level
		High cost of treatment
		High cost of a healthy diet
		Inability to self-manage the disease
		Feeling low self-efficacy
		Non-compliance with the medication regimen
		Non-adherence to diet
		Inadequate physical activity
Living with diabetes annoying consequences	Emotional & psychological problems	Constant stress and anxiety
	Unpleasant experiences of living with diabetes	Feeling hopeless
		Depression and social isolation
	Reduced quality of life	Experiencing the symptoms of the disease
		Experiencing disease complications
		Experiencing the treatment side effects
		Decreased libido and sexual dysfunction
		Inability to live in harmony with others
		Feeling different from others
		Experiencing the restrictions of life
		Experiencing social stigma

feedback. "*The patients should be able to work properly with the blood glucose meter and draw a chart and show it to their physician and be able to interpret them.*" (A 32-year-old male health care provider)

Supporting networks

This sub-theme was divided into formal and informal supporting networks. The first includes the need for inter-sectoral collaboration to develop nutrition or exercise programs at the community level, information support (identifying factors affecting blood sugar control, nutritional counseling, and patient education), emotional support and patient encouragement, screening for high-risk individuals to prevent and control the disease, and proper follow-up of treatment and care. Regarding the latter, the support of friends and family members plays a crucial role in controlling or treating this disease. Some of the interviewees declared that: "*The patients' family members significantly influence the way they follow our instructions*." (A 36-year-old male health care provider)

"*We need to educate patients, especially the elderly, and encourage them*." (A 50-year-old male health care provider)

Effective doctor–patient relationship

As stated by the interviewees, establishing a mutual doctor–patient relationship can facilitate disease management. This sub-theme includes adopting a participatory treatment approach including health care providers, the patient and his family, and trusting the physician's professional qualifications. Some interviewees asserted that: "*The fact that the patient likes his physician and communicates well with him helps a lot in following the recommended treatment*." (A 51-year-old female patient*)*

"*The patient should consult and keep in touch with a nutritionist. Offering a diet plan is not enough. A nutritionist should periodically follow up with the patient*." (A 31-year-old female health care provider)

Disease control barriers

Disease control barriers refer to those factors that can be an obstacle to the control and treatment of this disease. This theme includes the seven sub-themes of inadequate social support, misconceptions, patient burnout, low levels of health literacy, economic problems, inability to self-care, and the patient's non-compliance. Each of these sub-themes is discussed in the following.

Inadequate social support

Interviewees referred to insufficient physician supervision of the patient's compliance, inadequate rules for alternative therapies, and inadequate social support from related organizations. "*Social networks should be closely controlled and monitored because they might misinform people*." (A 32-year-old male health care provider)

On the other hand, the interviewees acknowledged the important role of family and friends in a patient's health; however, they might interfere with the caring process. For example, family problems, lack of family support and encouragement, family unawareness of how to care for the patient, and unscientific recommendations for the use of herbal medicines are among the known factors. "*Some patients are rejected by their family members; as a result, they do not care about controlling diabetes and improving their quality of life*." (A 55-year-old male patient)

Misconceptions and myths

This sub-theme includes the participants' perceptions of traditional therapies due to their lower cost, accessibility, and convenience; misconceptions about insulin addiction and its side effects; distrust of chemical medications; and so on. Also, some patients with diabetes and their families do not understand the burden of the disease correctly. Based on our interviewees beliefs; "*Herbal medicines have fewer side effects than chemical ones*." (A 56-year-old female patient) "*Some patients discontinue their treatment when their blood sugar is controlled by medications and think they have recovered. They regard diabetes as an infection that is treated with a single prescription*." (A 50-year-old female healthcare provider)

"*My physician told me to take insulin, but I prefer taking pills. I heard that insulin is highly addictive*." (49-year-old female patient)

"*One of my patients believed that his body was used to high blood sugar and taking insulin causes heart failure*!" (A 58-year-old female health care provider)

Patient burnout

Participants noted issues such as the chronic, frustrating, and stressful nature of the disease and the gradual loss of motivation to maintain a healthy lifestyle. It refers to patient frustration, lifelong treatment, difficulty in meeting long-term restrictions, and treatment-related problems. Resembling this concept, participants stated that: "*Abstinence causes considerable problems for patients with diabetes and makes them frustrated and unwilling to control the disease. Thinking of a lifelong abstinence is certainly very annoying*." (A 53-year-old male patient)

"*Taking insulin also makes the patients tired. One of my patients stated, how long should I take insulin? If it was supposed to be effective, I had already seen its effects*." (A 30-year-old female health care provider)

Low levels of health literacy

According to healthcare providers, as raising patients' awareness can contribute to understanding the disease, not paying attention to patients' education and their lack of awareness can be a major obstacle to their recovery. Therefore, low levels of health literacy lead to non-compliance with treatment instructions, lack of patient knowledge about reliable sources of information and care, and inability to assess their health status. "*Patients must know what to do in a new situation; for example, if they intend to travel to Mecca, they should know that walking barefoot causes foot ulcers. In general, it often happens* *that patients do not have the required information*." (A 31-year-old male health care provider)

Economic problems

Participants highlighted issues such as the high cost of drugs and healthy diet and insufficient income. "*Patients often have glucometers but cannot mostly afford the cost of test strips*." (A 29-year-old male health care provider)

Inability to self-care

It refers to the patient's inability to self-manage the disease, such as not checking the blood sugar level and not exercising regularly. Another important point is the inability to solve problems and adapt to diabetes, resulting in a low sense of self-efficacy. "*The patient cannot cope with the disease and accept it until he faces serious complications. If he had solved the problems from the beginning and adopted a healthy lifestyle, these problems would have never happened*." (A 34-year-old female health care provider)

The patient's non-compliance

It refers to the health care provider's perception of the patient's inability to follow the medical recommendations as well as their resistance to continuing the treatment. "*We see the patients' resistance to continue taking their medications, even after their symptoms relieved and their blood sugar was controlled*." (A 46-year-old male health care provider)

Living with diabetes has annoying consequences

This theme includes the three sub-themes of emotional and psychological problems, unpleasant experiences of living with diabetes, and reduced quality of life.

Emotional and psychological problems

Interviews with patients revealed that they usually had a constant fear and anxiety about the disease, which influenced their personal and professional lives, causing feelings of hopelessness, isolation, and depression. For example, a patient stated: "*I feel disappointed because my illness is incurable. I am isolated because I cannot retain the social status I want. I contact others less. Why me? This is my preoccupation*." (A 45-year-old male patient)

Unpleasant experiences of living with diabetes

Some patients are oversensitive to many symptoms and consider them as signs of their disease. This issue adversely influenced their lives and increased stress in these families. On the other hand, the disease and treatment-related complications are other unpleasant aspects perceived by patients. "*A series of typical symptoms such as weight loss, overeating, overdrinking, and frequent urination always occupy my mind, and I am constantly looking for specific symptoms of this disease day and night*." (A 38-year-old female patient)

Reduced quality of life

Several participants considered the use of anti-diabetic medications as a factor that decreased libido and were dissatisfied with it. On the other hand, feeling restricted or different from others and experiencing social stigma were among unpleasant experiences. Negative attitudes towards this disease also fall into this category. "*I found that metformin or insulin decreased my libido*." (A 57-year-old male patient)
"*Two of my colleagues, with whom I had close contact, retired very early, even though they were skilled administrative staffs*." (A 49-year-old male patient)

Discussion

This study aimed to find how individuals with diabetes and healthcare providers perceive living with Diabetes and its treatment and care. The three main themes of "disease control facilitators," "disease control barriers," and "living with diabetes annoying consequences" were extracted from the interviews. In this study, the main theme of "disease control facilitators", consists of the factors of healthy lifestyle, high levels of diabetes health literacy, self-care ability, supporting networks, and effective doctor–patient communication, which play an essential role in controlling and treatment of this disease. Several studies revealed that the development of type 2 diabetes was mainly due to an unhealthy lifestyle which is due to a lack of trust in the physician, low levels of awareness, and misconceptions.[15,16] According to the participants, lifestyle modifications such as a healthy diet, increasing physical activity, and exercising were among the factors that helped control the disease. Koch also showed that people with diabetes would include exercise as part of their daily routine if they believed in the benefits and effectiveness of physical activity.[17] Because of improving adherence to the treatment and medications and self-care, one of the disease control facilitators, in this study, was high levels of health literacy. In addition, the need to enhance patients' knowledge was highlighted by both interviewed groups. In this regard, Robat Sarpooshi *et al*.[18] showed a significant relationship between self-care and health literacy of diabetic patients, and patients with higher levels of self-care literacy had better self-care behaviors. Kolaric *et al*.[19] also reported that patients need to have sufficient knowledge about controlling their disease to make the necessary changes in their real-life conditions and closely follow the medical recommendations. In present study, Self-care ability consists of patient self-management ability and high self-efficacy, in other words, being able to pursue and commit to specific goals, consider the appropriate time to perform the activities, follow the medical recommendations, and evaluate the performance and receive feedback, was an important factor in disease control. Krzemińska *et al*.,[20] in their study showed, self-care affects adherence in patients with type 2 diabetes. The higher self-efficacy in each of the areas of functioning, the higher the level of treatment adherence.

As stated by the interviewees, establishing a mutual doctor–patient relationship, by adopting a participatory treatment approach, and trusting the physician's professional qualifications, can facilitate disease management. It is noteworthy that based on the experiences and perceptions of health care providers, besides lifestyle modification and raising awareness and educating patients, other factors such as social and family participation, physician experiences and beliefs to disease management, mutual communication and partnership between physician and patient, and attention to the principle of screening high-risk individuals facilitate the control of this disease. Peimani *et al*.[21] also noted the patient–physician interaction and the patient's involvement in treatment decision-making and cooperation with the physician. They stated that although the health team provides a treatment plan to control diabetes, the patients should follow the recommended diet and medication. Therefore, the patient's engagement in family support facilitates controlling this disease and removing obstacles to its care.

According to the participants, formal (ex. inter-sectoral collaboration to develop nutrition or exercise programs at the community level, information support, emotional support, and patient encouragement, screening for high-risk individuals to prevent and control the disease, and proper follow-up of treatment and care) and informal (ex. the support of friends and family members) supporting networks, play a crucial role in controlling or treating this disease. Caregivers (unpaid family and friends) play a crucial role in supporting the health, well-being, functional independence, and quality of life of growing numbers of persons living with complex needs.[22]

In this study, inadequate social support, misconceptions and myths, patient burnout, low levels of health literacy, economic problems, inability to self-care, and the patient's non-compliance, were the obstacles to control and treatment of this disease. In the present study, insufficient physician supervision of the patient's compliance, inadequate rules for alternative therapies, and inadequate social support from related organizations were disease control barriers. On the other hand, the important role of family and friends in a patient's health; might interfere with the caring process, because of family problems, lack of family support and encouragement, family unawareness of how to care for the patient, and unscientific recommendations for the use of herbal medicines. Social support is not limited to just familial support; rather, it also includes persons acting outside the family such as friends, and social facilities like financial support and services. Social support by family and friends is associated with better results of diabetes management such as self-management, diabetes control, reduction of stress related to performing self-care behaviors, facilitating compatibility and adaptation with diabetes diagnosis, and provision of resources for frequent engagement in self-care behaviors.[23] One of the disease control barriers in this study was: the desire to use traditional therapies due to their lower cost, accessibility, and convenience; misconceptions about insulin addiction and its side effects; distrust of chemical medications; and also, lack of understanding of disease burden. Fatigue, disappointment, frustration with treatment efforts, and the patient's misconceptions and beliefs were among the factors reported by both groups. In fact, due to the long and difficult restrictions, patients become tired and lose hope, which is a major barrier to controlling the disease. Also, having misconceptions, rooted in the low level of awareness and lack of attention to training and education, can interfere with the management process and the patient's adherence. These issues were mentioned in almost all interviews. A study revealed that there were many prevailing misconceptions among diabetic patients, especially related to diet, treatment, and self-care. This affects their health-seeking behavior and can affect the control of disease.[24]

In the present study, patient burnout, the patient's frustration and gradual loss of motivation to maintain a healthy lifestyle, lifelong treatment, difficulty in complying with long-term restrictions, and treatment-related problems, were experienced due to the chronic, frustrating, and stressful nature of the disease. The important factors that can contribute to exhaustion by diabetes is due to the psychological pressure from daily dealing with diabetes and also the lack of achievements in treating diabetes. Diabetes burnout is a combination of emotions and practices, ranging from tiredness to indifference, linked with a distressing sense of hopelessness.[25] According to healthcare providers, low levels of health literacy lead to non-compliance with treatment instructions, the patient's lack of knowledge of reliable sources of information and care, and the inability to assess their health status. Seyma and Baysal (2022), reported compliance with the treatment was better in patients who had higher diabetes health literacy levels.[26] Cultural and socio-economic factors, as well as the impact of family members were other concerns of the health team as barriers to disease control. Reshma *et al*. reported that self-care management for socio-economically disadvantaged people involves factors such as diabetes knowledge, physical inactivity, social support, access to services, life disruptions, denial of illness, societal attitudes, responsibilities, and treatment costs.[6] In another study, effective social support and helping patients to control their health status were reported as the factors that reduce patients' emotional stress and strengthen their satisfactory coping with the disease.[27]

In the present study, the inability to self-care, consisting of the inability to self-manage the disease and feeling low self-efficacy, was one of the disease control barriers. The self-care deficit assessment and supportive education program were essential to the nursing intervention that effectively improved knowledge, changed behavior, and HbA1c levels among adults with uncontrolled blood glucose.[28] Patient non-compliance, non-compliance with the medication regimen, non-adherence to diet, and inadequate physical activity, were one of the disease control barriers in this study. As the prevalence of diabetes continues to increase, it becomes even more important to focus on increasing adherence rates in patients with diabetes to reduce the incidence of co-morbid conditions and ease the burden on the healthcare system. Several studies have documented the low adherence rates in diabetic patients.[29] In this study, living with annoying consequences of diabetes such as emotional and psychological problems, unpleasant experiences of living with diabetes and reduced quality of life were experienced by the patients. This study demonstrated that patients usually had a constant fear and anxiety about the disease, causing feelings of hopelessness, isolation, and depression. Also, as stated by the health team, the patient's mental disorders can be barriers to controlling this disease. In fact, lack of control over environmental stress, psycho-emotional problems, disability, the psychological burden of the disease, and the impact of the disease on physical function are among the factors that adversely affect the recovery of patients. In this line, several studies reported that psychological problems negatively affected the healing process. Therefore, they recommended psychological interventions to improve the negative emotional consequences of chronic illness and help increase adherence to treatment instructions.[30-32] Oversensitive to many symptoms, some patients, influenced their lives and increased stress in their families. On the other hand, the disease and treatment-related complications were other unpleasant aspects perceived by patients. This finding was consistent with that of Mahmoudi *et al*.,[3] who also reported that fear of suffering serious and incurable complications, negative emotional perceptions, stress, and feeling compelled to observe restrictions were the stressors perceived by patients. It seems that identifying the stressors affecting these patients' experiences and related needs helps develop the relevant interventions to deal with them effectively.[14] In present study, decrease of libido because of anti-diabetic medications and feeling of being restricted or different from others and experiencing social stigma were among unpleasant experiences in patients. The association between diabetes mellitus (and its micro- and macro-vascular complications) and erectile dysfunctions and a decrease in libido, or loss of a sex drive both in males and females is widely known.[33] The results of Li e*t al*., study showed that the stronger the patients´ stigma, the poorer their medication adherence. Their study suggested that stigma negatively affected the QoL of patients with T2DM in China simultaneously, and the higher the patients´ stigma, the worse the QoL.[34] Lack of generalizability was the major limitation of this study which is due to its qualitative nature. The findings of this study, cannot be generalized, because only 23 participants are included in the current study, which represents a small sample size, and the findings of this study, only reflect the experiences of this group of participants. However, we selected patients from several urban health service centers, and they naturally do not represent all patients with diabetes. On the other hand, the selection of patients was not based on the degree of disease control, and their experiences could not be classified based on HbA1c. To our knowledge, the present study is the first qualitative study to evaluate the patients' misconceptions about diabetes, its complications, and care in Iran.

Conclusion

According to the present study, healthcare providers are recommended to familiarize themselves with the disease control facilitators and barriers faced by patients with diabetes, and the annoying consequences of patients related to living with diabetes. They should organize their supportive and consulting actions according to the patient's situation to improve the ability for self-care and quality of life of the patients. In this study, patients indicated a need to pay more attention to their needs. Health education at regular intervals, especially regarding false beliefs about diabetes, to promote knowledge about diabetes among patients with diabetes, and the general public, especially in diabetic clinics, and improve their treatment-seeking behavior, self-management, and compliance toward the treatment will have a positive impact on the quality of life. There is therefore a need for greater support services for patients receiving care. In general, it seems that most of the facilitators and barriers to disease care can be achieved and controlled with the close collaboration of patients, physicians, the community, and family.

Acknowledgments

The authors would like to thank all the staff and patients who kindly participated in interviews, and shared the details about their valuable experiences as well as the Isfahan University of Medical Sciences for their kind support and approval of the proposal.

Financial support and sponsorship

Vice Chancellor for Research, Isfahan University of Medical Sciences

Conflicts of interest

Nothing to declare.

References

1. Roth G. Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2017 (GBD 2017) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2018. Available from: https://www.who.int/news-room/fact-sheets/detail/diabetes. [Last accessed on 2021 Nov 10].
2. Khamseh ME, Sepanlou SG, Hashemi-Madani N, Joukar F, Mehrparvar AH, Faramarzi E, *et al*. Nationwide prevalence of diabetes and prediabetes and associated risk factors among Iranian adults: Analysis of data from PERSIAN cohort study. Diabetes Ther 2021;12:2921–38.
3. Mahmoudi A, Alavi M. Experience of diabetic patients and health team of diabetes control: A qualitative study. J Health

Promot Manag 2015;4:70-80.

4. Preethikaa S, Brundha MP. Awareness of diabetes mellitus among general population. Res J Pharm Technol 2018;11:1825-9.
5. Motahari-Tabari NS, Nasiri-Amiri F, Faramarzi M, Shirvani MA, Bakhtiari A, Omidvar S. The effectiveness of information-motivation-behavioral skills model on self-care practices in early pregnancy to prevent gestational diabetes mellitus in Iranian overweight and obese women: A randomized controlled trial. Community Health Equity Res Policy 2023;43:257-64.
6. Reshma P, Rajkumar E, John R, George AJ. Factors influencing self-care behavior of socio-economically disadvantaged diabetic patients: A systematic review. Health psychology open 2021;8:20551029211041427.
7. Hein SP. The effect of disease knowledge and family support on the self-care behaviours mediated by diabetes distress of patients with type 2 diabetes mellitus in Mandalay, Myanmar. 2023.
8. Walker RJ, Gebregziabher M, Martin-Harris B, Egede LE. Understanding the influence of psychological and socio-economic factors on diabetes self-care using structured equation modeling. Patient Educ Couns 2015;98:34-40.
9. Bengtsson M. How to plan and perform a qualitative study using content analysis. NursingPlus Open 2016;2:8-14.
10. Jaam M, Hadi MA, Kheir N, Ibrahim MI, Diab MI, Al-Abdulla SA, *et al*. A qualitative exploration of barriers to medication adherence among patients with uncontrolled diabetes in Qatar: Integrating perspectives of patients and health care providers. Patient Prefer Adherence 2018;12:2205-16.
11. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: Concepts, procedures and measures to achieve trustworthiness. Nurse Educ Today 2004;24:105-12.
12. Forero R, Nahidi S, De Costa J, Mohsin M, Fitzgerald G, Gibson N, *et al*. Application of four-dimension criteria to assess rigour of qualitative research in emergency medicine. BMC Health Serv Res 2018;18:1-11.
13. Enworo OC. Application of Guba and Lincoln’s parallel criteria to assess trustworthiness of qualitative research on indigenous social protection systems. Qual Res J 2023;23:372-84.
14. Hays DG, McKibben WB. Promoting rigorous research: Generalizability and qualitative research. J Couns Dev 2021;99:178-88.
15. Bukhsh A, Goh BH, Zimbudzi E, Lo C, Khan TM. Type 2 diabetes patients’ perspectives, experiences, and barriers toward diabetes-related self-care: A qualitative study from Pakistan. Front Endocrinol 2020;11:534873.
16. Abdullah A, Liew SM, Ng CJ, Ambigapathy S, V. Paranthaman PV. Health literacy experiences of multi-ethnic patients and their health-care providers in the management of type 2 diabetes in Malaysia: A qualitative study. Health Expect 2020;23:1166-76.
17. Sone H, Katagiri A, Ishibashi S, Abe R, Saito Y, Murase T, *et al*. Effects of lifestyle modifications on patients with type 2 diabetes: The Japan Diabetes Complications Study (JDCS) study design, baseline analysis and three year-interim report. Hormone Metab Res 2002;34:509-15.
18. Robat Sarpooshi D, Mahdizadeh M, Alizadeh Siuki H, Haddadi M, Robatsarpooshi H, Peyman N. The relationship between health literacy level and self-care behaviors in patients with diabetes. Patient Relat Outcome Meas 2020 May 5:129-35.
19. Kolaric V, Ajdukovic D, Racz A. Nursing evaluation of diabetes self-management in tertiary healthcare settings in Croatia. Psychiatr Danub 2014;26(Suppl 3):513-9.
20. Krzemińska S, Lomper K, Chudiak A, Ausili D, Uchmanowicz I. The association of the level of self-care on adherence to treatment in patients diagnosed with type 2 diabetes. Acta Diabetol 2021;58:437-45.
21. Peimani M, Garmaroudi G, Stewart AL, Yekaninejad M, Shakibazadeh E, Nasli-Esfahani E. Patient-physician interpersonal processes of care at the time of diabetes treatment intensification and their links to patient outcomes. Patient Educ Couns 2021;104:1659-67.
22. Williams AP, Peckham A, Kuluski K, Lum J, Warrick N, Spalding K, *et al*. Caring for caregivers: Challenging the assumptions. Healthc Pap 2015;15:8-21.
23. Aylaz R, Karadağ E, Işik K, Yildirim M. Relationship between social support and fatigue in patients with type 2 diabetes mellitus in the east of Turkey. Jpn J Nurs Sci 2015;12:367-76.
24. Nalavadey S, Baliga SS. Misconceptions about diabetes mellitus among diabetes patients: A cross-sectional study. Indian J Health Sci Biomed Res (Kleu) 2022;15:230-4.
25. Kontoangelos K, Raptis A, Lambadiari V, Economou M, Tsiori S, Katsi V, *et al*. Burnout related to diabetes mellitus: A critical analysis. Clin Pract Epidemiol Ment Health 2022;18:e174501792209010.
26. Şeyma EŞ, Baysal HY. An investigation of the diabetes health literacy level and compliance to the treatment in patients with diabetes in Turkey. Anatolian Curr Med J 2022;4:1-7.
27. Song Y, Song HJ, Han HR, Park SY, Nam S, Kim MT. Unmet needs for social support and effects on diabetes self-care activities in Korean Americans with type 2 diabetes. Diabetes Educ 2012;38:77-85.
28. Changsieng P, Pichayapinyo P, Lagampan S, Lapvongwatana P. Implementation of self-care deficits assessment and a nurse-led supportive education program in community hospitals for behavior change and HbA1c reduction: A cluster randomized controlled trial. J Prim Care Community Health 2023;14:21501319231181106.
29. MCClure C, Montrose J, Rector H, Coffin J. The diabetic patient and non-adherence. Diabetic Foot 2020:122-6.
30. Dafei M, Dehghani A. The effect of group counseling based on cognitive-behavioral approach on self-care behaviors and illness perception of middle-aged women with diabetes type 2: A quasi-experimental study. Avicenna J Nurs Midwifery Care 2020;28:216-26.
31. Chew BH, Vos RC, Metzendorf MI, Scholten RJ, Rutten GE. Psychological interventions for diabetes-related distress in adults with type 2 diabetes mellitus. Cochrane Database Syst Rev 2017;2017:1-10.
32. D’Eramo Melkus G, Chyun D, Vorderstrasse A, Newlin K, Jefferson V, Langerman S. The effect of a diabetes education, coping skills training, and care intervention on physiological and psychosocial outcomes in black women with type 2 diabetes. Biol Res Nurs 2010;12:7-19.
33. Corona G, Isidori AM, Aversa A, Bonomi M, Ferlin A, Foresta C, *et al*. Male and female sexual dysfunction in diabetic subjects: Focus on new antihyperglycemic drugs. Rev Endocr Metab Disord 2020;21:57-65.
34. Li X, Wu L, Yun J, Sun Q. The status of stigma in patients with type 2 diabetes mellitus and its association with medication adherence and quality of life in China: A cross-sectional study. Medicine 2023;102:e34242.