

Facilitators and Inhibitors of Self-Care Behaviors in Iranian Type 2 Diabetes Mellitus Patients; a Qualitative Research

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ABSTRACT

Aims Diabetes is a common disease manageable by self-care behaviors. Although studies have identified facilitators such as support, self-efficacy, and inhibitors such as insufficient information about diabetes and inadequate incentive for self-care behaviors, there has been no comprehensive qualitative study of Iranian diabetic patients and their self-care behaviors. This study aimed to determine the facilitators and inhibiting factors in type 2 diabetic patients' self-care behavior.

Participants & Methods Using a qualitative content analysis approach, 19 Iranian patients with type 2 diabetes between 30-60 years were purposefully selected. Semi-structured interviews helped collect data until saturation was reached after 25 interviews. Data were analyzed using the content analysis method.

Findings Researchers found two main themes indicating facilitators and inhibitors of self-care behavior and derived ten sub-themes. Perceived facilitators to self-care behaviors were diabetes as a life-threatening disease, self-control, self-efficacy in self-care, and support for self-care. Self-care inhibitors were personal inefficiencies, the others' beliefs about diabetes treatment, lack of support, perceived threat to self-identity for being a diabetic, arbitrary control, and perceived helplessness.

Conclusion Self-care behaviors among Iranian patients with type 2 diabetes are affected by multiple factors such as personal beliefs and attitudes, family and community support, and self-efficacy.

Keywords Diabetes Mellitus-Type 2; Self-Care; Qualitative Research

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Introduction

Diabetes is the most common endocrine disorder and the health condition affecting all human societies and all age ranges [1]. According to the World Health Organization, by 2030, people with diabetes will reach 366 million, with a prevalence of 4/6% worldwide [2] and 14% in Iran [3]. Type 2 diabetes mellitus (T2DM) is a chronic disease affected by complex genetic and socio-economic determinants of an unhealthy lifestyle [4]. Diabetes requires lifestyle modification [5]; education and support for diabetes self-management with diet, physical activity, advice on quitting smoking, and psychosocial care [1]. Inappropriate disease control can result in retinopathy, neuropathy, nephropathy, cardiovascular diseases, weakness, disability, and early death [6].

Glycemic control at the normal level is the main goal to treat diabetes through self-care behaviors [7]. Self-care is the individual's ability to monitor their health and change their cognitive, behavioral, and emotional demands by maintaining a good quality of life [8]. Adherence to medication regimen, diet, exercise, regular blood glucose monitoring, and foot care is self-care. According to the US reports, self-care challenges for diabetic patients are exercise and diet [9].

In a study by Al-Khawaldeh, type 2 diabetic Mellitus patients had the lowest score in self-care behaviors regarding blood glucose control and exercise [10]. In another study by Tharek, the most self-care behavior challenges for type 2 diabetic patients were taking their medication and observing their diet [11]. In general, people with T2DM do not have a good self-care status and have experienced many problems in self-care behavior (medication, nutrition, exercise, and mobility) and other areas [12].

Long-term lifestyle changes towards health behaviors can be challenging and require the promotion of self-care behaviors [13]. Individuals who pursue self-care behaviors have proven to control their blood glucose better [13]. Although self-care behaviors are influenced by adherence to medication intake, diet, exercise, blood glucose monitoring, and foot care, they are also associated with socio-demographic, psychological, and other factors involving diabetes [14].

Studies have shown that others' support [15], social support and self-efficacy factors [16], and particularly self-efficacy in foot care [17] can play an important and facilitating role in developing self-care behaviors [16]. It has been reported that a lack of sufficient health information and encouragement to be physically active have served as self-care inhibitors [18]. According to Nam *et al.*, cultural factors can influence self-care behaviors such as diet and lifestyle [19]. Other studies have found self-care behavior differences due to various cultures and psychosocial structures. Therefore, the patient's perspective is an

important determinant for self-care behaviors, especially among diabetic patients [20].

It was considering that no study has been performed on inhibitors and facilitators of self-care behaviors among patients with T2DM. It seemed valuable to investigate self-care behaviors among Iranian patients with T2DM within the Iranian cultural context. Thus, we conducted a qualitative study because it was the most suitable method for determining the various dimensions of a complicated phenomenon. Moreover, nurses and other health care providers play an important role in promoting self-care activities through education and planning for those who need to identify self-care priorities. So, this study aimed to assess and identify determinants associated with self-care behaviors in T2DM to promote practical strategies for effective self-care behaviors.

Participants and Methods

This study was designed according to the qualitative content analysis method. Qualitative content analysis is a method for analyzing oral, visual, and written data to provide knowledge and understanding of the phenomenon [21]. Researchers explain the determinants of self-care behaviors in T2DM for 19 Iranian patients referred to the Diabetes Clinic in Marvdasht, Iran. The clinic is affiliated with the Shiraz University of Medical Sciences, where participants are recruited for academic and medical research. Purposeful and goal-oriented sampling method employed maximum demographic diversity regarding age, occupation, level of education, and socioeconomic status. The inclusion criteria consisted of patients with T2DM, between the ages of 30-60 years, diagnosed for a minimum of 6 months, free of other conditions such as cancer and cardiovascular disease, willingness to participate in the study, being treated with insulin or on a diet, ability to communicate, ability to speak Persian and being a reliable informant. Participants who did not meet the inclusion criteria or were unwilling to consent lacked cognitive impairment, or had mental illnesses were excluded from participation.

Demographic data obtained at the first interview were followed with general questions to encourage the participants to recall and continue with the interview. Throughout the interview, researchers focused on facial expressions and body language or gestures to better understand expressions. Interviews continued until data saturation was reached. There were 11 individual interviews and 8 group discussions. A total of 25 interviews were conducted, and voice recorded. Later, tape-recorded data were transcribed for analysis and safely stored in Word files for maximum security.

Data analysis included the conventional qualitative content analysis approach introduced by Krippendorff & Hyannis [22]. Data were collected and

analyzed simultaneously and reciprocally in line with the purpose to identify self-care facilitators and inhibitors for diabetic participants in six stages according to [22] listed as 1- the researcher's acquaintance with data; 2- obtaining primary codes from data; 3- searching for themes using different browsers extracted from previous steps; 4- reviewing the themes and comparing them to ensure accuracy; 5- defining and naming the themes, and 6- preparing the final report.

The ethics code was obtained from the research ethics committee of Yasuj University of Medical Sciences. After obtaining a voluntary signed written informed consent, data collection was initiated through an in-depth unstructured interview and later progressed to a semi-structured interview in four sessions per patient. Interviews were conducted at a place and time convenient for the participants. Each interview lasted approximately 30 to 60 minutes, depending on the participants' conditions. Each participant had one to three interview sessions according to the information presented.

Four criteria used to establish rigor included credibility, transferability, dependability, and conformability for data accuracy and validity introduced by Guba & Lincoln [23]. Two external reviewers with previous qualitative research works examined the interview contents and class coding

processes to achieve validity. Critiques and comments were observed and discussed to reach collective agreements. The transferability of the findings was sought by providing a detailed description of the participants, the research process, the measures taken, and the research limitations. Researchers used the primary coding method to report and provide direct quotes from the participants for dependability. Conformability and data validation were established by controlling comments and assumptions to prevent bias or personal impact on data analysis. Researchers guaranteed the conformability of the research data by maintaining detailed documentation in all stages.

Findings

The study results were obtained from qualitative content analysis of data presented by 19 Iranian men and women with T2DM after 25 interviews (Table 1). Themes for the major category facilitators included perception of diabetes as a life-threatening condition, perceived self-control in diabetes, perceived self-efficacy in self-care, self-care support. Inhibitors to self-care were inefficiencies, others' normative beliefs to treat diabetes, lack of support, perceived threat to self-identity with diabetes, arbitrary control, and perceived helplessness (Table 2). In total, twenty sub-themes emerged in the themes.

Table 1) Participants' characteristics

Code	Age (years)	Gender	Marital status	History of diabetes (years)	Educational level	Living place
1	56	Male	Married	11	secondary education	Rural
2	35	Female	Single	5	secondary education	Urban
3	58	Female	Married	12	unable to read and write	Urban
4	60	Female	Married	16	unable to read and write	Urban
5	30	Female	Single	1	high school graduate	Urban
6	46	Male	Married	3	secondary education	Rural
7	52	Female	Married	3	unable to read and write	Urban
8	52	Female	Married	11	unable to read and write	Rural
9	60	Male	Married	3	unable to read and write	Urban
10	44	Female	Married	4	secondary education	Urban
11	53	Male	Married	4	unable to read and write	Rural
12	47	Male	Married	8	unable to read and write	Rural
13	55	Female	Married	5	high school graduate	urban
14	50	Female	Married	11	unable to read and write	urban
15	60	Female	Married	12	unable to read and write	rural
16	58	Male	Married	6	college-educated	urban
17	60	Female	Married	15	unable to read and write	urban
18	56	Male	Married	25	high school graduate	urban
19	33	Female	Married	6	high school graduate	urban

Table 2) Themes, sub-themes, and codes obtained from quality interviews with patients with type 2 diabetes

Theme	Sub-theme	Codes
Facilitators to self-care behaviors	Perception of Diabetes as a life-threatening condition	Perceived complications
	Perceived self-control in diabetes	belief in the controllable diabetes
Diabetes control Inhibitors	Perceived Self-efficacy in self-care	Perceived lifestyle as a diabetes controller
	Self-care support	Family support for self-care
	Lack of self-efficacy to control diabetes	Non-compliance to treatment and care
	Others' normative beliefs to treat diabetes	Inability to care for self
	Lack of support	Lack of health information on self-care
	The perceived threat to Self-identity with diabetes	Lack of family support
Arbitrary control	Lack of social support	
Perceived helplessness and disappointment	Inadequate access	
		A different view of diabetes

Facilitators to self-care behaviors in patients with diabetes

Perception of diabetes as a life-threatening condition

Participants perceived diabetes complications as a self-experience or by others frightening and life-threatening unless they engaged in self-care behavior.

-Perceived complications: were recognized as kidney damage, dialysis, neurological and vision impairment, loss of limbs, and the adverse effects of insulin injection/ hypoglycemia.

"I have been taking daily insulin for the past eight years, but my blood sugar is affecting my kidneys, just like my mother and sister." (Participant 15)

"I know diabetic patients needing dialysis, some have lost their vision, and some have difficulty with their legs. I'm afraid for my future because of these complications." (Participant 11)

"I'm scared of dying of diabetes like my husband who had dialysis." (Participant 4)

Perceived self-control in diabetes

Patients perceived diabetes as a controllable disease, especially through a healthy lifestyle.

- Belief in controllable diabetes: Patients believed that they could control diabetes by medication and self-care behavior modifications.

"Insulin is the best medicine to control blood glucose, and no drug has been as effective as insulin for me." (Participant 6)

- Perceived lifestyle as a diabetes controller: The patients believed in lifestyle improvements such as exercise (walking), relaxation, no stress, adequate sleep, and nutrition to control diabetes.

"I feel happy when my blood glucose is under control. It feels like that I've managed my disease with a proper diet, exercise, and regular daily walks." (Participant 1)

Most patients recognized the importance of relaxation and a healthier lifestyle for managing diabetes.

"I know relaxation helps control my blood glucose, and being stressed or nervous does not lower my blood glucose." (Participant 3)

The effectiveness of walking and proper nutrition to control diabetes was emphasized by most patients.

"I have to walk every day, avoid rice, meat, potatoes, sugar, butter and jam, and any food containing sugar or fat. I have to eat five small meals a day." (Participant 12)

Perceived self-efficacy in self-care

The patient's beliefs, intentions, and daily actions to control diabetes included lifestyle changes through modifications in self-care behaviors. Their intentions and actions consisted of adherence to a diabetic diet, exercise, and medications, acceptance of their disease, and efforts to reduce stress.

"I'm not going to hide from being a diabetic, take care of my eyes and feet by controlling my diet whether at

home or away. I am going to inject my insulin despite being with my friends." (Participant 5)

"I know which foods contain sugar, and I know high blood sugar symptoms. I regularly check my diet and blood sugar." (Participant 5)

Self-care support

All participants recognized the importance of family support and their self-care knowledge, such as new research, medical advice, and media access for current developments.

Family support for self-care: Family members' support for self-care and timely attention to physical health included reminders for taking medication and the following diet.

"My wife and my children insist that sugar is harmful and should not be consumed. They always remind me to watch my diet." (Participant 1)

"My wife constantly checks my fingers and toes to make sure they're healthy." (Participant 9)

"We visit our nutritionist to learn about the diabetic diet and new developments." (Participant 4)

"It is good that media such as radio and television regularly educate us about diabetes and proper diets." (Participant 1)

Diabetes control inhibitors

Diabetes control inhibitors were identified as lack of self-efficacy to control diabetes, others' normative beliefs to treat diabetes, threatened identity as a diabetic, lack of family support, and access to resources.

Lack of self-efficacy to control diabetes

This was an important inhibitor and participants found ineffective self-care and ignoring or neglecting their diabetic regimens was detrimental to their health. For instance lack of foot care, regular screening, lab tests, weight control, delayed doctor visits, and stress reduction were viewed as insouciance.

"I did not inject insulin and took oral medication instead. Actually, I did not care much about myself and I ate everything along with my medicine. I was careless about my health and diabetes complications. No one warned me before. Now, I inject insulin and perhaps my kidneys have been damaged." (Participant 15)

"I stopped taking insulin and I was unaware of diabetes complications." (Participant 10)

"It is hard to quit smoking and any exposure provokes me to smoke. I think I cannot quit. It is my only habit in the life I live [a nomad living in dessert]. I have to smoke." (Participant 6)

- Non-compliance to treatment and care: This inhibitor to self-care included irregular treatment plans by the patients, not taking medication, ignoring doctor's referral for a blood test, foot care, diet, excessive eating at family gatherings, while having the intention to control diabetes.

"As soon as I feel pain in my kidneys, I stop taking my medicine. When I find that I have been overeating, I

feel upset and wonder how high is my blood glucose.” (Participant 3)

“When I go to a party, invite guests or traveling I say to myself that I do not care about diabetes and overeat. That leads to high blood glucose due to my carelessness. (Participant 19)

- Inability to care for self: Participants referred to control of eating behaviors, stress levels, daily exercise due to physical limitations, and time and disease acuity as significant inhibitors to self-care.

“When I stand for a while, my feet swell, so I sit a lot and that sedentary lifestyle affects my blood glucose.” (Participant 9)

“I think I am developing dementia for being a diabetic. I cannot concentrate or take care of myself.” Participant 6)

- Lack of health information on self-care: Participants did not know where or how to access information on different types of exercise, diet, and stress reduction techniques to improve their health and manage diabetes. Self-medication, smoking, and being unaware of diabetes complications were among the inhibitors to self-care.

“I thought an open insulin Pen should be kept in the refrigerator. Not having my insulin pen with me delayed the time for my next injection dose.” (Participant 7)

Others' normative beliefs to treat diabetes

These were the attitudes and traditional beliefs on diabetes treatment that included natural remedies, herbal treatments, synthetic drugs being dangerous, diet, and medicines prescribed by non-professionals. “One of my family members told me that I was too young for taking medication for diabetes and instead I should try acupuncture or herbal medicines to control my blood glucose. Of course, I am influenced by what they say. Now I know how harmful these non-professional comments can be for my health.” (Participant 10)

Lack of support

Although support was expressed as a facilitator of self-care behaviors, lack of support as the lack of family support, inadequate community support, and inadequate access were inhibitors.

- Lack of family support: Uninformed family members offered less support for diabetic control and even engaged in disputes over how to manage the disease with self-care.

“When my husband does not know the importance of blood glucose control, he comes home from work to have a prepared lunch and is unconcerned about my health. My daughters tell me to stop taking medication and even get rid of my medicines.” (Participant 3)

“My wife says that I do not have any problem and there is no need to take medication. She does not mind feeding me whatever she makes for the family, regardless of sugar amount.” (Participant 16)

- Lack of social support: Diabetic condition is socially

rejected due to the lack of information and community or government support. This is a major problem as insurance companies prefer to avoid healthcare costs.

“I have financial problems and many doctors do not accept the referral form, which means I have to pay for every visit and other costs.” (Participant 7)

“The cost of doctor visits is high in our country, and diabetics have to pay out of pocket for all their medical expenses.” (Participant 12)

- Inadequate access: Participants wanted to have access to nutrition, medications, medical care, economic assistance, and the opportunity for self-care and self-support.

“I am working as a construction worker, wearing shoes from morning till night, sweating, I cannot keep my feet dry due to my job, sometimes materials such as cement pours and damage my feet and I cannot care them.” (Participant 11)

“I am a driver and unable to take my medication regularly and on time.” (Participant 1)

The perceived threat to Self-identity with diabetes

Fear and anxiety for being a diabetic as a threat to their identity consumed our participants and led to hiding and ignoring their diagnosis.

- A different view of diabetes: The fear of being known as a diabetic was threatening to self-identity, humiliating, irritating, and frustrating for men and women. Social stigma and hiding the disease have resulted in damaged pride, non-compliance to treatment, ignored diet, and exercise.

“Although I have been diagnosed with diabetes years ago, my family still look at me as a diabetic person and that bothers me. They also view my husband and my kids through a diabetic lens.” (Participant 15)

“I had my medicine, insulin injection, and diabetes because I did not want anyone to find out that I'm a diabetic and hear their comments afterward.” (Participant 19)

“Although I need to inject insulin at night, while I'm at a party or a wedding, I do not inject owing to the need for raising my sleeve in front of the people. On these occasions, I do not care about my diet leading to the high blood glucose.” (Participant 17)

Arbitrary control

Being un-awareness of the disease complications inhibited proper self-care through self-medication to reduce the cost of the doctor visit and medications. Participants manipulated drug dosage, used herbal remedies, eliminated blood testing, and ignored test results.

“Sometimes at parties and family gatherings, I let myself forget that I'm a diabetic and decided not to care. I ate sweets thinking that I'd take more medicine later and actually would change my drug doses.” (Participant 7)

“I use opium because I heard that it is effective for lowering blood glucose and it is better to manage high blood glucose levels.” (Participant 16)

Recognizing diabetes as a permanent, incurable, bad luck, or latent form of cancer led to the feeling of helplessness and inhibited disease control and the desire for self-care.

"Diabetes is a bad luck and humiliating for causing blindness, loss of kidneys, amputation, and having no cure." (Participant 7)

"Diabetes is the worst disease. We should do our best to control it. It's like leprosy eradicating a person from within." (Participant 18)

"I was disappointed with no hope for survival from diabetes and contemplated suicide after hearing my diagnosis. I intentionally did not inject insulin or take medication to increase my blood glucose and end my life. I burned my foot with a cigarette on purpose and scratched the burns with a dirty knife to get the infection and die." (Participants 6)

Discussion

In this comprehensive qualitative study, researchers examined multiple factors associated with diabetes self-control. The findings show that self-care behaviors among type 2 diabetic patients in Iran are affected by factors known as facilitators and inhibitors. Study participants identified positive and negative beliefs and attitudes influencing diabetes and self-care behaviors. The emotional aspects of diabetes complications were expressed as fear, anxiety, hopelessness, self-identity threat, and even life-threatening.

In a study by Tewahido *et al.*, diabetic patients experienced fear, confusion, and ineffective self-care strategies to control diabetes. They feared the perceived consequences of the disease and failed to follow proper self-care behaviors [24]. In contrast, we found that fears of diabetes complications provoked self-care to control diabetes. Meanwhile, other researchers have shown that long-term lifestyle changes regarding daily behaviors and diet were more difficult to plan and enforce for patients and healthcare providers [13].

Perceived self-efficacy was another key facilitator of self-care behavior, in which patients either intended or took measures to engage in self-care with diet and medication. As Tharek *et al.* indicated, self-efficacy positively correlates with self-care behaviors for diabetic patients controlling their blood glucose levels [11]. Similarly, Sharoni *et al.* reported that self-efficacy programs promoted effective foot care among diabetic patients [17].

In this study, participants believed that family support plays an important role in self-care when family members observe and reinforce a healthy lifestyle such as a diet for a diabetic patient, especially on timing for taking medications. Katon supported our findings and reported that patients' family members had an important facilitating role in self-care for type 2 diabetic patients [15].

The inhibitors of self-care behaviors were inefficiencies in self-care for managing diabetes with irrational tendencies, lack of motivation or knowledge to change behavior, non-compliance to treatment and therapeutic regimens, insouciance, physical and/or mental disability, lack of time, and the disease acuity. Similar to the results of this study, lack of proper information, motivation, and incentive to maintain regular physical activity and self-care were reported by Bhagavathula *et al.* [18]. In another study, patients had inadequate access to information and knowledge about the importance of self-care [24]. But, Nshisso reported that medical costs and physical limitations were the main reasons for the lack of self-care compliance among elderly patients. They needed more emotional support for daily exercise [25]. Patients with inadequate health information often engage in arbitrary management of their disease with dose changes, herbal medicine, not using their glucometer to control blood glucose levels, ignoring doctor and laboratory appointments, and refusing to follow proper self-care. Jarab *et al.* showed that insufficient knowledge and health information about diabetes affected disease management [26]. In some studies, foot care was not considered a self-care behavior due to a misunderstanding of its importance or consequences of diabetic foot ulcers [27].

Other peoples' normative beliefs can affect self-care, especially when family members try to interfere in self-care behaviors without the medical knowledge and reach negative results. Research investigations have shown that family's inadequate nutritional understanding or beliefs are a serious challenge for managing diabetes [24]. Similarly, Jarab *et al.* reported patients' erroneous beliefs about their medications were consistent with the providers' concerns regarding compliance with the prescribed medications. Patients reported serious concerns about the medication's side effects [26].

The perceived threat to self-identity for being a diabetic was another reason for single and younger patients avoiding self-care behaviors. Patients reported feeling humiliated, irritated, and afraid of the social stigma, worried about their career and life as a whole. Older patients did not report these sentiments. Identity threat was a negative feeling associated with being a diabetic. It was an incentive to hide the diagnosis, especially among the younger participants, leading to the lack of self-care. Consistent with our findings, Ritholz stated that fear of judged, guilt, and humiliation influenced diabetic patients' self-care behaviors [28]. Diabetic patients showed more social and emotional problems compared to non-diabetic people. Researchers found more negative feelings such as frustration, inadequacy, and disappointment, resulting in a lack of desire to maintain a normal blood glucose level and healthy lifestyle [29].

Although the need for family support and health information on diabetes were expressed as

facilitators, the lack of these factors was described as inhibitors for some patients. No support from family to keep a healthy diet, regulate medication, and reduce stress was reported as a challenge to self-care. Hunt *et al.* added that lack of friends and family support inhibited self-care [16]. Lekoubou *et al.* argued that limited finances prohibited self-care for the inability to access medication, proper food at local markets, and maintaining a regular exercise plan [30]. Diabetic patients should be informed about their medication doses, administration, side effects, and the expectation to achieve a normal blood glucose level to have a successful disease management plan [26].

The chronic and incurable nature of diabetes with significant complications brought a sense of helplessness and a lack of motivation for self-care behaviors. Participants viewed diabetes as a latent form of cancer. As Song reported, diabetic adults with an earlier diagnosis had a better outlook of their disease and self-care behaviors than newly diagnosed younger patients. The latter struggled with self-care behaviors [31]. In Zulman's study, psychological factors such as stress had a role in the level of self-care [9]. Another study revealed diabetic patients exhibiting severe depressive symptoms and not interested in discussing self-care behaviors. Depressed patients' unwillingness to care for their disease was the reason for their lack of self-care [29]. One limitation of the study was the refusal of eligible patients to be interviewed. One of the strengths of this study is that identifying beliefs, values, and factors affecting the self-care process to identify the sources affecting the disease and facilitators can have more effective education for type 2 diabetic patients.

Conclusion

The themes of facilitators and inhibitors to diabetic self-care included patients' perception of diabetes as a life-threatening disease, perceived self-control, self-efficacy, and self-care support. Participants identified inhibiting inefficiencies in self-care, others' normative beliefs on diabetes treatment, lack of support, perceived threat to self-identity due to diabetes, arbitrary control, and perceived helplessness.

These findings could help design an innovative approach to promote self-care behaviors among diabetic patients. Knowing how to influence a diabetic patient's self-care behaviors plays a significant role in promoting healthy behaviors. It is suggested that in any medical team, Healthcare providers such as nurses have an important role in providing effective diabetes training by considering patients' self-perceptions and beliefs for achieving wellness. It is suggested that in future studies, interventions be designed to address the self-care barriers of patients with T2DM.

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Conflicts of Interests: This study is a part of the master's thesis and approved by the Yasuj University of Medical Sciences.

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