Original Article

Access this article online

Quick Response Code:

Website: www.jehp.net

DOI: 10.4103/jehp.jehp_1451_20

Facilitators and barriers of herbal medicine use in diabetic patients: A qualitative study

Ali Akbar Vaezi, Ahmad Sotoudeh[1], Nasim Namiranian[2], Mojtaba Fattahi Ardakani[2], Moradali Zareipour[3]

Department of Nursing, School of Nursing and Midwifery, Research Center for Nursing and Midwifery Care in Family Health, Shahid Sadughi University of Medical Science, Yazd, Iran, [1]Department of Health Education and Promotion, School of Public Health, Bushehr University of Medical Sciences, Bushehr, Iran, [2]Diabetes Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran, [3]Health System Research Unit, Health Center of Urmia, Urmia University of Medical Sciences, Urmia, Iran

Address for correspondence:
Dr. Mojtaba Fattahi Ardakani, Diabetes Research Center, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.
E-mail: mjfattahi57@gmail.com

Received: 28-10-2020
Accepted: 28-01-2021
Published: 31-08-2021

Abstract:

BACKGROUND: In several countries such as Iran, the use of complementary and alternative medical products like herbal medicine is growing. There is, however, a lack of research on the prospects of herbal medicine patrons regarding facilitators and herbal medicine use barriers. The aim of this study was to explain the facilitators and the barriers of herbal medicine use in type 2 diabetes mellitus (T2DM) patients.

MATERIALS AND METHODS: Qualitative one-to-one in-depth interviews were conducted with patients with T2DM from the Yazd Diabetes Research Center, using a semi-structured guide. For the recruitment of T2DM participants who used herbal medicine beside conventional medicine, purposeful sampling was used. Analysis of the data was carried out using the steps proposed by Graneheim and Landman strategies.

RESULTS: Sixteen patients were interviewed. There were 2 subjects (facilitators and barriers herbal medicine use), 8 categories, and 89 initial codes. The facilitators included individual preferences, preparation skills, and family support and the factors obstructing the use of herbal medicine included insufficient skills about preparing, lack of easy access to consumption, insufficient of efficacy of herbal medicine, and negative properties of herbal medicine and taking time in preparing herbal medicine.

CONCLUSION: Although some people use herbal medicine, the interest in use of herbal medicine is limited because of inadequate awareness of the impact and usage them. Therefore, the use of effective strategy in the integration of herbal remedies with conventional medicine can promote well-being of patients.

Keywords:

Complementary medicine, herbal medicine, qualitative, type 2 diabetes mellitus

Introduction

Although the diabetes medication is improved, type 1 and type 2 diabetes mellitus (T2DM) patients are poorly controlled.[1] The patients who are disappointed in conventional therapy search for other therapeutics. Complementary and alternative medicine (CAM) can be broadly defined as alternatives to health care formed beyond mainstream medicine, with "complementary" meaning used following conventional medicine and "alternative" meaning used instead.[2] According to Azizi-Fini *et al*. and Hashempur *et al*., studies between 50% and 79% of Iranians had used at least one type of CAM during their lives, based on surveys in 1997, 2006, and 2016.[3,4]

Herbal medicine is the most common type of CAM used by T2DM. Herbal medicine use such as botanical drugs, herbal teas, dietary supplements, or indigenous formulation containing herbs has increased significantly during the last two decades in many developed and developing countries.[5,6]

How to cite this article: Vaezi AA, Sotoudeh A, Namiranian N, Ardakani MF, Zareipour M. Facilitators and barriers of herbal medicine use in diabetic patients: A qualitative study. J Edu Health Promot 2021;10:303.

Scientific studies documented the efficacy and safety of some medicinal plants in the treatment of diseases such as diabetes.[7,8] The herbal medicine consumption has long been common in Iran as well as other countries. In various historical periods, the consumption of herbal medicine has undergone many changes due to the requirements. Today, herbal medicines are also produced as pills, syrups, ointments, and capsules. Leaves, fruits, roots, and barks of stems of plants and trees are used to prepare herbal medicine.[9-11] Depending on its effect, parts of the plant can be used as a powder, decoction, or raw. There are different reasons for use of herbal medicine alone or in conjunction with conventional therapy. These reasons include the reduced efficacy of conventional medicine, side effects of conventional medicine, easy accessibility, and the acceptance of herbal medicine by social norms and approved people.[12,13]

On the contrary, there are some barriers in using herbal medicine, such as uninformed suppliers, inadequate dosage, bad packaging and labeling, fake products, and fear of lethal consequences.[14] Herbal remedies, similar to conventional medicine, have been reported with side effects. Although gastrointestinal tract disorders, skin rashes, liver, and kidney toxicity are detected as the side effects of herbal medicine,[15] many patients continue to use herbal medicine.[16] However, patients' experiences and perception of herbal medicine are important. Experience and belief about herbal medicine can be the determinant factors of herbal medicine use. Aziato and Antwi study realized belief about herbal medicine efficacy and personal preferences are enhancing factors. Negative perceptions and attitudes regarding herbal medicine, poor knowledge of salespersons, and unreliable efficacy of some herbal product were the factors hindered the use of herbal medicine.[14] Indeed, Bishop *et al*. explored why consumers maintain CAM. Their fundings showed that the cognitive - emotional factors and advice by health care professionals are the factors influencing the use or not use of CAM.[17] Previous studies in various countries have investigated the effective factors on medical herbs consumption. However, the reasons of their consumption from the viewpoint of the diabetic patients have not been examined in Iran. Hence, the present study conducted with the purpose of indicating the effective factors in consumption or not consumption of medical herbs among diabetic patients in Iran.

Materials and Methods

Study design and setting

The investigation utilized an exploratory qualitative methodology to explore the facilitators and barriers of herbal medicine in Iran. The qualitative methodology empowered the analysts to development on rising reasons why patients utilized or did not utilize herbal medicine.[18]

Study participants and sampling

The interviews were carried out in a purposive sampling between November 2019 and Feb 2020 to include the wide age ranges of groups in this study.

The research was being carried out at a diabetes research center in Yazd, Iran. The clinic was founded in 2001 and is providing outpatient treatment for clients looking for various caring and treatments. The mean of weekly attendance ranges from 400 to 500. The interviews were performed according to face-to-face semi-structured interview. The inclusion criteria were at least 1 year onT2DM treatment and permanent residence (resident over 5 years) in Yazd and complete satisfaction for the participation. The target participants were deliberately chosen if they could share their experiences, have a range of herbal medicine-related experiences, and come from a variety of backgrounds; those with information-rich, different, or extreme experiences were also included. The first author screened patients by analyzing their medical history, and the diabetes physician also offered support in determining the patient met the inclusion criteria for the research. The first author personally approached all patients who met the inclusion criteria of our sample as the patients waited for their appointments with the diabetes physician.

Data collection tool and technique

The study's intent and the procedure were clarified to the qualified patients and invited to interview them within a week for their acceptance. The selection of 16 participants was following the guiding principle of "data saturation,"[19] which is "(sampling to the point that no new information is extracted and redundancy is achieved). "The interviews have been conducted by using a single interviewer (researcher) to decrease inter-individual variability. The researcher was used open-ended question about the use of herbal medicine. Before of interview, the goal of the study was explained to participants. The duration of each interview varied 15–45 min depending on the interview condition. For example, participants replied to question vaguely and need to provide more explanation, which led to longer interview time. Indeed, it depended on the interviewee's interest to replying to questions. Interviews were conducted in private rooms that maintain the principle of confidentiality. Therefore, both the interviewer and the participants came from similar areas and therefore had similar backgrounds and were exposed to similar herbal medicine interactions, which could promote greater understanding and encourage better communication. The patient interviews started with introductory questions about build a friendly environment and proceed with sentences such as " How do you manage your illness? What kind of herbal medicine do you use?? How manage your illness?" "Please talk about your

illness and conditions," "How do you manage your illness? What kind of herbal medicine do you use?" "What times do you use these drugs?" "Can you tell me when you are less likely to use these drugs?" What factors make you easier to use herbal medicines?

"Meaning by.," "tell me more about," and so on. All of the participants had satisfied with the recording voice of the interview. After recording, the interview was talked notes at the earliest possible time. The author conducted a second interview with three of the participants after typing the interviews and their reviews in response to the need for more detail.

Ethical consideration

Participants were clarified about the purpose of the study before sampling. In addition, participants were asked to sign informed written consent forms to participate in the study. They were also told that their information remained confidential. Code of ethics (IR. SSU. REC.1398.233) was also received from Yazd University of Medical Sciences' Ethics Committee.

Data analysis

First, the audio-recorded interviews were typed into Microsoft Word. The typed-up interviews were imported to qualitative data analysis software MAXQDA10 and analyzed using Landman and Graneheim, a Thematic analysis model. Each interview was re-read several times and was referred to the recording if it was not understood. The initial-level 250 codes were extracted from the breaking of texts. In the second level, initial codes based on similarity and differences were investigated. Similar codes were placed in one category and were named (22 codes). Then, similar categories combined and adding new emerging codes. Finally, the similar codes produced thematic categories. When the codes verified and categories were created, the authors considered terms of saturation. Ultimately, the data from 19 interviews with 16 participates were analyzed.

The data were analyzed by first and second authors according to their experiences in the qualitative researches. The second author analyzed the data and then discussed to the first author to prevent the assumption bias which may influence the study process. To evaluate and enhance the scientific trustworthiness of the study, or the accuracy of results, the recommended methods by Lincon and Guba were implemented.[19]

The consistency and quality of the data included transferability, credibility, dependability, and conformability. To confirm the findings (credibility), an attempt was made to use participants with the maximum variety of experiences, and the interviews continued until the data were saturated. To increase the validity of content, coded data and transcribed text were returned to participants to confirm and comment. External checks were used to increased dependability. Data transferability was given by providing a comprehensive information service, topic definition, participants, data gathering, and data analyzing. Moreover, to meet the conformability and acceptability of the study, the opinions of two experts in qualitative research were used as they examined and analyzed the different dimensions of the research study.[20,21]

Most of the patients in the study were female (66.5%). Furthermore, 66.8% of patients were between 41 and 66 years. Two main themes were established with their corresponding subthemes: barrier and facilitators of the herbal medicine usage are shown in Table 1.

Them1: Barriers to use herbal medicine

This theme describes factors perceived to impede the use of herbal medicine, such as time-consuming about preparing, insufficient skills about preparing, difficult transportation, varying efficacy of herbal medicine, and bad experience of herbal medicine use. The created subthemes are listed here.

Subthem1-1: Time consuming nature of providing the medical herbs

Many participants believed that the use of these drugs needs to enough time. Preparing or boiling needs more time than conventional therapy. Thus often, participants use it sometimes in a month. Often of interviewee said, *"I use herbal medicine when I have not otherchoices. It means when my conditions are not right; I think to use these medicines."* Females use herbal medicine more than males. One participant stated, *"if my wife gives me these medicines, I use it. But I did not use it lonely. I am not in the mood boiling or preparing these drugs."*

Subthem1-2: Insufficient skills about preparing

Some participants believed that combining volume and time of boiling is very important. Thus, it would be useful about efficacy. They said they did not know how should preparing these medicine, thus they did not use. The participant said insufficient skills about preparing could be dangerous. Thus, they avoid using herbal medicine.

Subthem1-3: Lack of easy access to consumption

Participants declared that using herbal medicine than conventional medicine is not accessible. When traveling or moving to another location, there is no possibility of carrying out herbal medicine. The use of these medications needs to welfare amenities. Thus, the use of it is difficult. These medicines need more free volume that is one of the barriers about using every time. One of the participants stated, *"I cannot use herbal medicine when traveling. Sometimes hotels did not have an oven*. One

Table 1: The codes, subcategories, and categories of barriers to use herbal medicine of patients with type 2 diabetes

Codes	Subcategory	Category
Belief that herbal medicine cause smell bad	Bad condition after use	Negative properties of herbal medicine
Family support	Natural properties of herbal medicine	
Affective state		
Herbal medicine packages are large and bulky		Hard to consume at any time and place
It is difficult to transfer herbal medicine It is difficult to transfer herbal medicine		
Lack of effect on lowering blood sugar with green tea		no efficiency of decreasing blood sugar
Lack of effect on lowering blood sugar with thyme		
Insufficient effect on lowering blood sugar with ginger		
Preparation of herbal medicine is difficult		Requires skills in preparing herbal medicine
Lack of skills in preparing herbal medicine		
Need for support in the preparation of herbal medicine by the family	Family support	Family support
Do not have patience in preparing herbal medicine	Affective state	
Taking time in preparing herbal medicine		Time consuming nature of providing the medical herbs

of the participants stated," *I cannot use herbal medicine when traveling. Sometimes hotels did not have an oven. Thus I can't combine and boiling these medicine."*

Subthem1-4: Insufficient of efficacy of herbal medicine

Some participants claimed that some herbal products were ineffective. Some had previously used these drugs, while they had not received results to control the disease. *"When hales Eller prescribed bitteralmond, I used it about 2 months, but blood glucose did not differ, and it was high."*

Subthem1-5: Negative properties of herbal medicine

The participant's thoughts use of herbal medicine depends on excitement. Some interviewees said *my temperament is not compatible with herbal medicine. These medicines are bitter, and the smell of it is not pleasant. Thus I do not like this medicine.* One participant said, *"I used fenugreek once. It was bitter and never will use it anymore."*

Them2: Herbal medicines facilitators

This theme explores the reasons that stimulated herbal medicine use. It was realized that promoting herbal medicine use, individual preferences, preparation skills, and family support encouraged the use of herbal medicine among the participants in this research.

Subthem1-2: individual preferences

Some interviewees said herbal medicine is one the leading choices for managing the disease because they like this group of medicine. *"I love herbal medicine, so much I love it, and it is so good for me. When I do take it, I feel fine. My taste was compatible with herbal medicine."* A participant wished that the local herbal medicines were more likely to be considered, and more studies on it were studied. He felt that the lack of knowledge of these drugs resulted in more patients" tendency to conventional therapy. Some participants said, *"Although herbal medicine is bitter, I use it."* They added and combined with perfumes. They said these drugs do not have side effects, and it makes I love it than other medicine.

Subthem2-2: Preparation skills

Some participants said that the reason for herbal medicine use is knowledge preparation. *"I love it; I know how to combine and boil it. Thus taste of it would be good."* Often, female patients have enjoyable in preparing. Male participants said if my wife prepares, I drink – often male patient dependent with his wife.

Subthem3-2: Family support

Family support was one of the leading facilitators of using herbal medicine. The emotional family atmosphere has a direct role in the use of herbal medicine. If family relationships were kind, a patient would be considered disease and look for other treatments. *"When the home atmosphere would be good, I prepare the herbal medicine, and as a result, I have felt calmer."*

Discussion

This study aimed to investigate the factors affecting the use of herbal medicines in diabetic patients. This qualitative study explained the experiences of diabetic patients in using herbal medicines as a complementary medicine. Based on the obtained results, the effective factors in using herbal medicines were categorized into two main themes, including barriers and facilitators. Herbal medicines are not usually used continuously since herbal medicines must be used for a long period of time by patients. One of the factors affecting failure to perform appropriate behavior expressed by patients or people in the community was lack of time. The reason for behaviors such as exercise, screening, and nutrition by people in the community has been reported "lack of time."[22-25] Some studies on diabetic patients have reported "lack of patience and sufficient time" as an important factor responsible for noncompliance to drug

and diet.[26] Lack of skills in preparing herbal medicines has been expressed as one of the factors associated with unwillingness to use herbal medicines. In Iran, many herbal medicines are in the form of herbs and nonindustrial.[27] Therefore, they should be processed, powdered, or used by making herbal infusion or decoction. Therefore, some patients do not have the related skill and knowledge and refuse to use it as a complementary medicine. Other studies have also stated lack of knowledge in this field as a determining factor in not using these medicines, which is in line with the present study.[28,29]

Lack of accessibility of herbal medicines is also one of the barriers mentioned by some patients. As mentioned, the use of these medicines requires enough time. Most herbal medicines, such as nettle, thyme, and chamomile, need to be used by making infusion or decoction. They are available as raw herbs and cannot be readily used. Therefore, it is more difficult to use them while traveling and at work, like conventional medicines. Accessibility is emphasized as a determining factor in using health services.[30,31] Therefore, using herbal medicines can be increased by industrializing and converting them into easy-to-use products.

Some patients reported the ineffectiveness of herbal medicines as a determining factor in not using them along with conventional medicines. Belief in ineffectiveness can reduce the tendency to use herbal medicines. Ineffectiveness can be due to a lack of knowledge about the effectiveness, the amount of usage, and the way of preparation. Therefore, by increasing knowledge and skills in this field, patients' views on the ineffectiveness of medicines can be modified.[17] The negative experience of patients in using herbal medicines was another factor mentioned as a barrier to the continued use of such medicines.[6,32]

The majority of patients also stated the reasons for not using herbal medicines, such as bitter and bad taste and bad smell of some of these medicines. Unfortunately, in Iran, special attention has not been paid to the industry and packaging of these medicines, which can be considered as an important factor in the lack of herbal medicine industry development. It is necessary to pay more attention to this important issue in Iran, in line with other studies.[33]

Some diabetics used herbal medicines more than others. The results of perceptions and experiences of these patients and interviews indicated that there were more facilitating factors in this group of patients. One of the effective factors is individual preferences. These preferences depend on their personality and individual characteristics, such as their smell and taste. In the study of Aziato, individual preferences were reported as a facilitator in using herbal medicines, which is consistent with the current study.[14] Moreover, one of the facilitating factors in using herbal medicine is the skill in its preparation. Patients who are familiar with the preparation, amount, and method of using herbal medicines are more likely to use them. Although lack of skills is considered as a barrier to use herbal medicines, having skills and awareness is considered as an important factor in using herbal medicines.[34] Other studies have shown that having skills and awareness can increase people's self-efficacy. Self-efficacy has been proven in many studies as a strong predictor of health-promoting and self-care behaviors.[35-37] Therefore, increasing knowledge and awareness in this field can lead to an increase in the willingness to use herbal medicines. Family support is also identified as one of the facilitators in the use of herbal medicines. Social support is considered as one of the determining factors in performing health-promoting behaviors.[38] Therefore, people receiving higher perceived social support, would have more commitment to their health condition. This commitment would lead to better management of the disease, which has been confirmed by the results of other studies as well.[39-42]

Conclusion

The rational use of herbal remedies based on evidence can help to control diabetes. Several factors can reduce the use of these drugs. The absence of herbal medicines as conventional medicine and lack of skill in providing drugs by patients can reduce the use of these drugs. The physicians' lack of attention to these drugs and unawareness of patients' use of herbal medicine could be dangerous and complication. Therefore, the attention of the government to the herbal medicine industry and investment in this sector can contribute significantly to overcoming the obstacles of the use of these drugs.

Strengths

In general, the findings of this study can be used to reduce barriers to the use of herbal medicines (complementary medicine) and increase adherence in patients with diabetes in using herbal medicines (complementary medicine). The integration of such programs in the health system and using health-care providers can be helpful in facilitating the use of herbal medicines (complementary medicine).

Limitations

Limited time, budget, and qualitative research could be the limitations of this study. Therefore, the results of the present study do not represent the whole population and cannot be generalized to all diabetic patients using herbal medicines (complementary medicine). Furthermore,

lack of cooperation of some health personnel and the unwillingness of some patients to participate were other limitations of this study. However, the limitations were resolved to some extent by explaining the objectives of the study to the participants and ensuring the confidentiality of the information.

Financial support and sponsorship

This study was financially supported by Yazd University of Medical Science.

Conflicts of interest

There are no conflicts of interest.

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