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The most prominent problems of diabetes education in Iran: A qualitative content analysis

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Abstract:

BACKGROUND: Education in vulnerable communities can be a health affordable strategy to promote patient empowerment. Recognition and understanding the problems of diabetes education are of significance to overcome the barriers and advance the educational and care services to control diabetes and promotion of society health. The aim of this study was to explore participants' perspectives, experiences, and preferences, regarding diabetes education problems.

MATERIALS AND METHODS: This descriptive, qualitative study was conducted from March 2016 to September 2017. The participants were 23 people including nine patients with diabetes and their family members and 14 members of diabetes healthcare team (physicians, nurses, and nutritionists). The data were collected through individual semi-structured interviews and analyzed through conventional content analysis approach proposed by Graneheim and Lundman. Some main categories and subcategories emerged.

RESULTS: Three main categories showed the most prominent problems of diabetes education, namely, inadequate infrastructure for diabetes education, insufficient defined and *de facto* position for the role of diabetes nurse educator, and the failure in patient-oriented team approach in diabetes education.

CONCLUSION: This article addresses the most important problems of diabetes education. The fundamental strategy to overcome these problems seems to be the planning and management of diabetes education as a high priority in the noncommunicable disease management policies of the Ministry of Health and Medical Education.

Keywords:

Diabetes mellitus, education of patients, Iran, nursing, qualitative research

Introduction

Patients with diabetes need diabetes self-management education (DSME) to help them manage the disease as much as possible.^[1] Although the benefits of DSME and support (DSME/S) have been proven, the number of type 2 diabetes patients receiving these education services is low. To increase the number of people receiving DSME/S, it is necessary to consider the barriers that currently limit the service provision. Factors such as the health system, the healthcare professional, community

resources, and the person with diabetes are some of the barriers associated with this challenge. Misunderstandings about the necessity and effectiveness of DSME/S, confusion about when and how referrals for education, insufficient access to DSME/S, and patient psychosocial and behavioral factors can be among these barriers. Provider misunderstanding that can limit accessing DSME/S, including misunderstandings about education allocation and funding issues, and misunderstandings about one or more initial training visits to provide self-management skills lifetime in patients, is considered sufficient.^[2] In their review paper, Abazari *et al.* have also categorized

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the barriers of effective education in two general categories of barriers related to the patient and those related to educator/care provider.^[3]

Therefore, various factors can hinder the effectiveness of DSME/S. On the other hand, planning to deal with and eliminate diabetes education barriers needs in-depth description and understanding of the meaning of these factors in the context of their occurrence through qualitative inquiry. Applying qualitative research in healthcare enables researchers to answer the questions, which cannot be responded easily by quantitative methods.^[4] This study describing the experiences of diabetes learners and educators is an attempt to create a better recognition of diabetes education problems in Iran.

Materials and Methods

Study design and setting

This study using qualitative content analysis approach^[5] was conducted from March 2016 to September 2017 during 7 months. The research settings included the Endocrine and Metabolism Research Center, private, public, and charity diabetes clinics in Isfahan, Iran.

Study participants and sampling

The participants were 23 people with maximum variety including patients with type 2 diabetes and their family members (9 people) as education receivers and diabetes health team members including endocrinologists who were faculty members, general physician (diabetes), nutritionist, and nurses (14 people) as education providers. The inclusion criteria of the study included at least 2 years of history of affliction by type 2 diabetes for the patients, no comorbid chronic condition, and tendency to share the experience and interview in Persian at the time of the study. Inclusion criteria for family members were history of taking care of patients with diabetes for at least 2 years. Inclusion criterion for nurses and nutritionists was history of diabetes education for at least 3 years, and inclusion criterion for physicians was history of diabetes treatment for at least 3 years. The exclusion criterion in each of these groups was voluntary withdrawal from the study.

Data collection tool and technique

Data were collected through semi-structured interviews in 30–45 min by the researcher (first author) and thesis supervisor (corresponding author) in clinic educational hall or conference room of treatment centers. At the beginning of each interview session, the researchers introduced themselves to the participants and explained the goals and reasons for doing the research. The participants were assured that all the information will be kept confidential and used only for research purposes. All the interviews were recorded. The interviews

continued until they yield new information. Each interview began using a general question: “Would you please talk about your experience in diabetes education?” Then, specific questions were raised to continue the interviews. Some specific questions that were asked from the education providers include “What are the most important current problems in diabetes education?” and “What solutions do you suggest to overcome these problems?” Sample questions that were asked from education receivers (patient and family members) include “What problems have you encountered to receive diabetes education?” and “How can we overcome these problems?” After the interviews were conducted, they were exactly transcribed. The researchers examined the interviews regularly to obtain all the data. The interviews continued until data saturation. To analyze the data and achieve an appropriate level of abstraction, the five-step analysis of Lundman and Graneheim was applied.^[6] At first, the transcript of each interview was reviewed several times to gain a general understanding about its manifest and latent content. Then, meaning units were determined and coded. The codes were grouped into some main categories and subcategories according to their similarities.

To increase data rigor, several strategies such as immersion, peer debriefing, data source triangulation, providing representative quotations, and member checking were used. To achieve reliability, the encoded manuscripts by the first author were checked for agreement with the similar analyzed samples by the second author, and they were edited as necessary. To facilitate transferability, a clear and distinct description of culture and context, selection and characteristics of participants, data collection and process of analysis, and a rich and vigorous presentation of the findings together with appropriate quotations were provided. It is also important that sufficient thick description of the phenomenon under investigation is provided to allow readers to have a proper understanding of it, thereby enabling them to compare the instances of the phenomenon described in the research report with those that they have seen emerge in their situations.

Ethical consideration

This research has been approved by the Ethics Committee of Isfahan University of Medical Sciences, Isfahan, Iran (code: IR.MUI.REC.1396.3.215). All the participants were aware of the aims and method of the study, and written informed consent forms were obtained from all of them. Their volunteer participation, quitting the study at any time, and information privacy and anonymity were included in the consent form. However, one of the participants (a woman) did not agree to record her voice; therefore, this interview was done through note-taking.

Results

The study was conducted based on the data obtained from 23 interviews with six patients with type 2 diabetes (5 women and one man in age range of 22–64), three family members (2 women and a man in age range of 32–60), and 14 diabetes educators in clinics and diabetes centers (2 endocrinologists and faculty members, 2 general physician [diabetes], 7 nurses, and 3 nutritionist). Demographic characteristics of key informant interview participants are presented in Table 1.

The prominent problems of diabetes education were grouped in three main categories, namely inadequate infrastructure for diabetes education, insufficient defined and *de facto* position for the role of diabetes nurse educator (DNE), and the failure in patient-oriented team approach in diabetes education [Table 2].

First category: Inadequate infrastructure for diabetes education

The value infrastructure of an education plays a significant role in creating and shaping educational activities and methods and depicting desirability and frameworks and even the processes. The three subcategories of this main category were (i) insufficient physicians' participation in diabetes education, (ii) heavy workload, limited time for education, and shortage

specialized workforce, and (iii) updated knowledge deficits in diabetes educators.

Insufficient physicians' participation in diabetes education

Considering the complexity of diabetes disease, accessing DSME is necessary to reduce the risk of complications. Most of the patients with diabetes receive the preliminary cares only from the physicians. If the physicians do not participate in diabetes education and do not upgrade it, the patients will not be aware of DSME programs or they do not understand the benefits of attending it. The participants' experience showed that the physicians pay more attention to diagnosis and medical treatment. Prescription and test request were of more significance to physicians. A nurse stated that:

"... Unfortunately, in Iran, the physician is not responsible for patient's education. The physicians do not collaborate in these cases at all. In most cases, they only prescribe tests and medicines ..." (N3).

Mostly, the patient's education aspects were put aside by the physicians. Although they were aware of the principles of patient education and support based on the standards of American Diabetes Association, they did not believe in that and did not take it seriously. A general physician stated that:

Table 1: Demographic characteristics of key informant interview participants

Participants	Gender		Age (years)	Diabetes education experience (years)
	Woman	Man		
Nutritionist (diabetes)	D1	-	40	11
	-	D2	60	16
	D3	-	48	10
Nurse (diabetes)	N1	-	32	8
	N2	-	55	8
	N3	-	25	3
	N4	-	26	3
	N5	-	42	8
	N6	-	56	8
	N7	-	48	7
Endocrinologist and faculty members	E1	-	36	6
	E2	-	40	6
General physician (diabetes)	O1	-	51	6
	-	O2	30	4
Patients, from illiterate to university education				Duration of diabetes
	P1	-	60	6
	P2	-	22	2
	P3	-	60	10
	P4	-	50	4
	P5	-	32	6
Family members (from illiterate to university education)	-	P6	64	8
				Duration of care
	F1	-	32	10
	-	F2	60	4
	F3	-	34	6

Table 2: Prominent problems of diabetes education

Main categories	Sub category
Inadequate infrastructure for diabetes education	Insufficient physician's participation in diabetes education Heavy workload, limited time for education and specialized workforce shortages
Insufficient defined and <i>de facto</i> position for the role of DNE	Updated knowledge deficits in diabetes educator's Unfamiliarity with the role of DNE for patient, family, and society Lack of DNE program in health system
Failure in patient-oriented team approach in diabetes education	Loss of patient's trust in nurse education Limited team performance and interprofession collaboration Inadequate leadership in teamwork management

DNE=Diabetes nurse educator

"There are some physicians who do not believe in diabetes education; therefore, they do not take it seriously" (O1).

The physicians believed that they are mainly responsible for patient treatment. Therefore, during the time that they are in the office, regarding the high number of patients, treatment will be their priority and they have no time for education. An endocrinologist said:

"... The number of patients is high and the office time is limited and the physicians' care is treatment care, not education care" (E1).

Heavy workload, limited time for education, and specialized workforce shortages

Physicians' time constraints for patients' education, strong demand of patients for being visited by the specialist, waiting for visit time for a long time, patients' time-consuming visits, inadequate number of specialists and subspecialists, high workload, and time pressure were considered as effective factors which cause the physician not having enough time for patient's education. A general physician said:

"... In some treatment centers, the workload and the number of patients are very high and the number of specialists is low... patient's education is time-consuming ... and it increases the work pressure and the physician may not be able to do the education task completely ..." (O1).

A patient companion said:

"... We sit for a long time waiting for our visit ... when it is our turn, the physician does not spend a lot of time with us and immediately starts to write the prescription ..." (F2).

Educator workforce shortage is one of the main problems, which constantly causes diabetes education to be inefficient as a challenge. The participants posed repeatedly the patients' need for education and demonstrated the insufficient educator personnel in these centers. A nurse stated that:

"... The fundamental problem is the need for sufficient number of qualified educators, those who passed courses and have work

experience so that they can educate the patients to do their self-cares (N1)."

The educators in diabetes centers were responsible for many tasks and multi-educational, research, care, and treatment roles and had to perform all these tasks and roles during the day in the office hours, despite the high number of patients. To manage these tasks, they faced heavy workload and it caused them to devote less time for patient's education. A nutritionist said that:

"... Each of us must do the research job and the educational, counseling and treatment job; therefore, we do not have enough time for each patient and we cannot exactly listen to their talk" (D1).

Updated knowledge deficits in diabetes educators

The need for skillful nurse with updated knowledge for DSME to respond and educate the patient precisely and the need for having sufficient knowledge, experience, and skill related to diabetes education and its complications caused the necessity of nurses' empowerment in diabetes education. A nurse said that:

"... Diabetes nurse educator must have complete updated information ... and increase his/her awareness and skills so that s/he can educate the patients properly" (N1).

Providing targeted education to patient by professional updated educators could be more effective in transferring the information and increasing their awareness. A nurse said:

"... Diabetes nurse must be more specialized ... and education must be purposeful in diabetes education. By increasing the updated information, the nurse can have a better information transfer to the patients ..." (N7).

Second category: Insufficient defined and *de facto* position for the role of diabetes nurse educator

In determining and defining the nurse roles, the society's agreement and confirmation and health system's rules are necessary. The main role of DNE is focusing on care based on the evaluation of people's special educational needs, providing information, and public empowerment. The

three subcategories of this category were (i) unfamiliarity with the role of DNE for patient, family, and society, (ii) lack of having DNE program in health system, and (iii) loss of patients' trust in nurse education.

Unfamiliarity with the role of diabetes nurse educator for patient, family, and society

DNEs have a wide significant role in upgrading diabetic patients' life quality through self-care behaviors. The patients and their family members were unaware of the presence of DNE in public and private centers, and they did not know what the role of DNE in diabetes self-care and achieving treatment goals is. A nurse said that:

"... The patients and their families do not know about the diabetes nurse educator. They may attend some educational classes in a public center, but they do not know that they can communicate constantly with a diabetes nurse educator in a public and private center and receive individual education or refer regularly and talk about their problems and receive education in this regard" (N2).

A patient stated that:

"... I had attended some classes of diabetes center before ... but when I went to my physician's office, I noticed for the first time that I can also receive education privately by the nurses there ..." (P1).

DNEs make the society aware of the significance of health upgrade and life quality improvement. The participants did not know about the presence of DNE in some physicians' offices and also about their role in providing diabetes self-care education because only few DNEs who were trained in a short-term specialized standard education were active in the society. A nurse said that:

"... Maybe the fundamental problem is that there is no appropriate legal definition of diabetes educator in the society. As an educator, I must define my role and tasks and explain the fact that what I am doing and what you can do with the help of my explanations (for your self-care) for everybody who comes to my workplace ..." (N1).

Lack of diabetes nurse educator program in health system

Preparing an approved educational program in the health system to make the nurses professional in line with DSME helps to control the patients' diabetes. Diabetes educators emphasized that the role, precise job description, job identity, and professional position in health system must be determined because this role is more active and time-consuming and they are active as educator, consultant, professional nurse, and facilitator. A nurse said that:

"... Maybe the main problem is that in the health system there is no definition for nurses as diabetes educator. We are

unknown everywhere. We are even unknown for the physician. The physician does not refer the patient to us. This is because s/he does not know the educator. S/he does not know the educator's role. I guess s/he does not know how the nurse can help her/his patient" (E2).

DNEs believed that despite their high collaboration in doing research studies related to diabetes education in university affiliated research centers, they did not have time to publish some articles with the title of DNE in the journals so that their role in the health system remained hidden. A nurse stated that:

"... It was better to do a research in this field ourselves for introducing our identity; maybe it is needed that the educators write articles based on the research scientific job they do and defend (their professional identity) in them; so, it is determined in the health system and nurse system what the tasks of educators are ..." (N5).

Loss of patients' trust in nurse education

Trust is the main element of the relationship between educator and patient, and strengthening interpersonal trust and interaction affect the patients' commitment to the treatments. Failure and weakness in diabetes education and sometimes paradoxes on the side of some nonprofessional nurses cause patients and their family members' reluctance and losing trust toward receiving education from the nurses. Some patients trust more on the education and recommendations by physicians, especially endocrine and metabolism specialists and subspecialists for diabetes self-management or complication prevention, and use them in a better manner. A nurse said that:

"... If the information given to the patients is paradoxical, the patient will trust us no more. The first important job in diabetes education is attracting patient's trust by giving proper information. If there is no trust on the side of the patient, the information given to him will not help" (N6).

Third category: Failure in patient-oriented team approach in diabetes education

The patients have an important role in managing their disease. In fact, as a part of the treatment team, they are very significant. Team approach for diabetes care can help the patients in dealing with the wide range of diabetes complication. Failure in team approach means disability in appropriate and satisfactory function. The two subcategories of this category were (i) limited team performance and interprofession collaboration and (ii) inadequate leadership in teamwork management.

Limited team performance and interprofession collaboration

Patient-oriented education with team approach has been built on mutual relationship of patient and health

team. This approach can cause shortening treatment length, increasing satisfaction, reducing treatment error, reducing hospitalization costs, and generally, improving treatment state. Due to the chronic nature of diabetes and its complication, the participants in this study frequently emphasized the significance of diabetes education in teamwork form and interactional communication between DNE and other specialized professions, including physician, nutritionist, physical educator, and psychologist. They also considered the role of nurse in team education integrity an important factor. A general physician stated that:

"... A team must work for the patient ... if there is no team approach education, patient with diabetes education will face some problems ... in teamwork, there exists experience and educational circle that are really helpful." (O1).

Inadequate leadership in teamwork management

Creating collaborative integrated relationships among several majors under a strong leadership, together with forming advanced active communications and better access of the patient to appropriate specialties, are necessary. Interdisciplinary team (IDT) approaches in diabetes care affect blood sugar control of patients with diabetes. The participants emphasized the necessity of teamwork in an interactive manner and with nurse leadership. They reported the DNE role as necessary in relation to having an integrated intranetwork communication in team with management and coordination. A nurse stated that:

"... Because the disease aspects are wide, each person such as nurse or physical educator in this team has a role in patient education. The nurse causes the teamwork to be comprehensive and provides the patient with an integrated education" (O1).

Discussion

Describing and demonstrating the issues and problems that confront DSME with a challenge will be the first and may be the most important steps for moving toward effective education.

Insufficient physicians' time, high number of educators' tasks, high number of patients in public and private centers, heavy workload, shortage specialized staff, and time limit were serious barriers for organizing diabetes education. In Molayaghobi *et al.*'s study, there was one trained diabetes nurse per 2000 cases of diabetes patients only 2 days a week in a diabetes center, and there was a diabetes physician who had to visit 50–60 patients with diabetes every day for a period of 4–5 h; therefore, patients' education and follow-up were seriously challenged, resulting in patients' adherence which was not committed to their diet, medication, and

physical activity.^[7] In Iran, most patients tend to receive education and care from physicians; however, because of physician's high workload, patients' education by the physician is not possible. Moreover, the physicians do not have the necessary knowledge and skills to accept the role of educator.^[8] Patient's education needs time, attention, motivational approach, and updated knowledge, and doing so is time-consuming enough.

Updated knowledge deficits in diabetes educators show lack of infrastructure for organizing diabetes education. Nurses' poor knowledge, heavy workload, shortage of skilled staff, and multiple tasks further affect the effectiveness of diabetes education. The results of a study in Saudi Arabia confirm that the barriers for increasing nurses' knowledge in diabetes care and management are lack of specialized resources in this field, heavy workload inside and outside the hospital, staff shortage, lack of motivation, and lack of institutional support.^[9] Furthermore, a study in India showed that lack of time and heavy workload are the barriers of education and learning.^[10]

In this study, insufficient defined and *de facto* position for diabetes educators in family, society, and health system was identified as a barrier for effective diabetes education. Perhaps, one of the reasons for anonymity of DNE position is that there is no diabetes nursing major at the universalities of Iran. Another reason for ambiguity of DNE role is that until now, there has been no formal centralized or decentralized professional course with government support for educating nurses. Moreover, care and education task of patients with diabetes are done by people or nurses who accept the responsibility without participating in educational courses. This finding is in line with the findings of Goudarzian *et al.*'s study which showed that the nurses are working as educators in Iran's diabetes centers and clinics without evaluating their knowledge, skills, or experience in diabetes education, as well as without passing educational courses.^[11,12]

Loss of patients' trust in nurse education can also be rooted in the fact that diabetes education has been left to nonprofessional and unskilled staff. The other studies confirm that diabetes education should be done by professional and trained staff. These professionals must have the necessary experience and skills and participate in special theoretical and practical courses through formal institutions to provide quality education for patients with diabetes.^[13,14] Perhaps, in Iran, the challenge of DNE position and limitation of performance development can be affected by factors such as health educational system at public level, professional experience, nursing education, professional competence, and workplace policies. A systematic literature review shows that the

need for diabetes educator workforce in the society is affected by economic uncertainty conditions, elderly population, chronic disease rate increase, shortage of staff in healthcare system, legal changes, micro- and macro-economic factors, supply and demand, and healthcare costs.^[15]

According to the findings of the present study, using patient-oriented team approach and integrity of different specialties in disciplines related to diabetes was emphasized. The International Diabetes Federation, in global collaboration for diabetes effective management, has already established an interdisciplinary team (IDT) as one of ten operational stages for healthcare professionals to help more people to achieve their glycemic goals.^[16] For realizing effective diabetes management, we need the collaboration of a focused, strong, and trained team in health care.^[17] If DNE at the same time of coordination, supervision, and leadership, and despite hierarchical structures refer the patients to each specialist in the team including the physician, nutritionist, physical educator, or psychologist, s/he can reinforce and manage teamwork motivation in team members and develop a diabetes team with patient-oriented approach. Developing diabetes healthcare team and having variety of specialties and different services can be provided, and clinical processes improvement with reasonable costs can be achieved. In addition, diabetes management by a specialized diabetes team (endocrinologist, DNE, nutritionist, and social worker) to diabetes control and management reduces the rate of medical services and diabetes costs of hospitalized patients, and therefore, doing the cares and follow-up by patient will be improved^[18] and helps economic and social challenge management.^[19] The evidence shows that the current care clinics in the society with the leadership of a specialist nurse under a physician' support who is especially trained about diabetes has resulted in significant advances in blood sugar, blood pressure, and low-density lipoprotein cholesterol control in type 2 patients with diabetes.^[20] Diabetes educators can help enrich the patients' experience, provide key education to improve patients' knowledge, and provide on time and comprehensive clinical care education. It seems that patients with diabetes can use diabetes education by the IDT in a better and easier way.

Limitation and recommendation

Limitations of the present study include the fact that qualitative analysis may be criticized for being subjective, interpretive, and nongeneralizable, but it can provide a deep understanding of the phenomenon under study.

One of the fundamental actions to remove challenges of diabetes education is prioritizing the implementation of diabetes educational curriculums which are applied for developing specialized and skillful workforce including

DNE. Innovation with team approach and leadership of DNE can provide the appropriate background to realize optimized care of patients with diabetes at society and health system level.

Conclusion

Recognition and understanding of the most important problems and challenges of diabetes education to overcome the barriers and control diabetes and upgrade society health are of significance and can be related to improving decision making in health micro- or macro-planning for which managers, policy-making workgroups, and nursing major planners make effort to strengthen diabetes education service quality for achieving prevention goals and diabetes control.

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Conflicts of interest

There are no conflicts of interest.

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