Inadequate investment on management of diabetes education

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Aims: Reforming and improving the patient education process need more insight into the strengths and weaknesses of the existing education process. There is little documentation on patient education in National Diabetes Prevention and Control Program in Iran, so the present study aimed to describe patient education process in diabetes centers in one of the provinces of Iran. **Materials and Methods:** This is a qualitative content analysis. Twelve nurses who work as diabetes nurse educators (DNEs) and an internal medicine specialist participated in this study. Data was obtained through semi-structured face-to-face interviews, a focus group, existing documents, field notes, and multiple observations. Data analysis was guided by the conventional approach of qualitative content analysis. **Results:** Three main themes including unequipped trainers (insufficient knowledge and experience, lack of appropriate educational facilities, lack of time, lack of patient's interest), unstructured education (lack of educational need assessment, lack of evaluation, lack of continuing patient education), unmanaged education (lack of official planning for patient education and supervising the education process) emerged from qualitative content analysis. **Conclusions:** Although patient education is one of the important strategies in National Diabetes Prevention and Control Program, there however has not been necessary investment and adequate space to achieve it. Patient education was not structured and based on scientific principles. Training of diabetes nurse educators (DNEs) is neglected, and there is no supervision on patient education process.

Key words: Diabetes mellitus, education, health educator, need assessment

INTRODUCTION

Diabetes is a non-communicable chronic disease causing considerable morbidity and mortality.[1,2] Diabetes has been known as one of the major health challenges in developed and developing countries[3,4] and imposes a large economic burden to patients, families, and healthcare systems.[5] Uncontrolled diabetes often leads to complications such as heart disease, stroke, hypertension, blindness, kidney disease, and amputations.[6] Diabetes also decreases quality of life, increases depression incidence,[7] and has the negative effect on the patient's ability to self-care, which lead to poor glycemic control.[5] Since diabetes affects all aspects of life, diabetes care is complex and requires considering many issues that extend beyond glycemic control,[8] although adequate control of blood sugar in diabetes management is crucial to prevent complications.[9] Fundamental aspect of diabetes care is to provide skills and information that are required for best daily diabetes management[10] and are the main tool for maintaining metabolic control.[11] Therefore, education is a cost-effective element for effective disease management and provides the opportunity to avoid expensive medical treatment and co-morbid conditions.[6] Several studies have shown that proper diabetes education has significant impact on decreasing diabetes complications and its related cost.[8,12]

Several studies conducted around the country have confirmed the effectiveness of education on reducing glycosylated hemoglobin,[13-16] depression[16,17] as well as improving mood,[16,17] quality of life,[13,18] patient's nutritional knowledge,[19] knowledge, attitude and performance.[14,20]

However, despite the effectiveness of education on diabetes management, several studies have suggested poor or improper patients' knowledge and performance in treatment regimen, complications prevention and control, diet, and gestational diabetes management.[21-25] According to studies, inadequate patient education is the most important factor in patients' poor knowledge and poor performance. Most people with diabetes do not receive any formal education in diabetes.[8] O'Brien and Denham

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(2008) assessed patients' education in rural areas in America and showed that a small number of rural patients referred for diabetes education, or nutritional counseling. Ninety-eight percent of patients with diabetes had not received any training and 96% were not referred for nutritional counseling.[6] In addition, Ali and Jusoff (2009) conducted a qualitative study in Malaysia, which stated that patients have not received information about the disease and its complications.[9] Azizi's study in Iran (1993) showed that a large percentage of patients with diabetes did not receive education.

Diabetes prevention and control has been considered in the health system's priorities in Iran from 2003.[26] Therefore, given that inadequate education will increase the risk of diabetes complications and its economic burden,[5] patient and family education has been introduced as one of the main principles of diabetes management in policy planning.[26] This responsibility is delegated to nurses working in diabetes centers. Despite the implementation of National Diabetes Prevention and Control Program during past 7 years, there is no formal assessment of patients' education. The study aimed to qualitatively describe education process for patients with diabetes who are covered by National Diabetes Prevention and Control Program.

Qualitative research in comparison with quantitative research provides more opportunities for researchers to explore, discover, and explain the different fields in which healthcare professionals' performance and patients' behaviors are happened. Therefore, it provides a more comprehensive understanding of many aspects of health system. Since the successful management of patient education is vital, we used qualitative research methods to achieve a deeper understanding of the characteristics, and factors affecting patient education.[27]

Subjects and methods

This qualitative content analysis was conducted in 2010–2011. Qualitative content analysis is used in analysis and subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns.[28-30]

In this study, the textual data from semi-structured individual interviews with key informants, a focus group attended by diabetes nurse educators (DNEs), field notes and multiple observations, documents and books (including book of Diabetes Prevention and Control Program[26] and memos) were used for qualitative data analysis. 10 DNEs working in diabetes centers in Isfahan and its related counties, 2 DNEs working in the two northern provinces, 1 internal medicine specialist, who has been employed in a diabetes center in one of the counties of Isfahan since the start of National Diabetes Prevention and Control Program, participated in study. Nurses' work experience in diabetes centers was between 1 and 3 years. Six nurses participated in a focus group, and in other cases, individual semi-structured interviews with participants were conducted.

Researchers took participants' consent for recording interview, and determined the proper location and time of interview. Interviews lasted between 20 and 40 min (the average time was 25 min), and focus group lasted 45 min. All individual interviews and the focus group were recorded on the MP4 recording device and then were heard repeatedly, and typed in Microsoft Office Word 2007 software.

Furthermore, first researcher's observations (as complete observer and sometime as participant–observer) formed another part of the data analysis.

After repeated listening, reading, and immersing in all collected data, a general picture was obtained. Obtained data were read and verbatim meaning unit of them were extracted. For this, at first, exact words of text that expresses key ideas or concepts was highlighted. Then researchers' note (i.e. their ideas, thoughts, and primary analysis) were added to the text. At this point meaning units that represent the similar concepts were coded. Then various codes were merged and categorized based on their relationships and similarity. Finally three main themes were emerged.

Multiple strategies (triangulation of data sources and data collection methods, continual observations) were used to promote trustworthiness. Coding process repeatedly revised to ensure consistency of coding. In addition, for peer debriefing, fellow authors read texts and checked themes in every stage.

Ethical consideration

The research proposal was approved by the research committee at the nursing department of Tarbiat Modares University in Tehran, Iran. Respondents' written informed consent was obtained. They were free to quit the interview at any point. In addition, they were reassured about confidentiality.

RESULTS

Three main themes (including unequipped trainers, unstructured education, and unmanaged education) emerged on qualitative content analysis. They are shown in Table 1.

Unequipped trainers

According to the experiences of nurses participating in the study, field observations and existing documents (results

of written tests that measure DNE's knowledge level), diabetes education was transferred to nurses who had not passed a training course, and had insufficient knowledge and experience for patient education especially patients with diabetes. These nurses have started working as a DNE in diabetes centers. One of the nurses participated in focus group said:

"I came here one year ago. Nobody trained me. Nobody told me to do these things as a diabetes nurse. It was my duty. They told me that there was nobody except me, so I had to be a diabetes nurse." (Nurse #5)

Lack of appropriate training facilities, especially lack of or inappropriate physical space for patient education was serious concern for nurses working in diabetes centers in counties. One of the nurses participated in focus group said:

"I have tried for two months to provide a small training room. Now, almost 50% of its related problems dissolved. You know just for a training class you should try and try." (Nurse #2)

Another nurse said:

"I often asked them to give me a good and suitable room, but they just gave me a room that was smaller than this room. I had twenty young patients at that time. It was too small to breathe in it or to teach them." (Nurse #5 participated in focus group)

Lack of appropriate educational pamphlets was the other DNEs' concern.

"Because our patients are mostly illiterate, they need pamphlet with more pictures. We have not this type of educational materials. Our educational pamphlet is not perfect. Some things that we have are too general. They were prepared without our opinion. I mean they prepared pamphlets themselves without considering our needs for patient education. It is not based on our experiences." (Nurse #7)

Table 1: Themes and sub-themes from content analysis of text data about diabetes education status

Unequipped trainers	*Insufficient knowledge and experience, lack of appropriate educational facilities, lack of time, lack of patient's interest*
Unstructured education	*Lack of educational need assessment, lack of evaluation, lack of continuing patient education*
Unmanaged education	*Lack of official planning for patient education and supervising the education process*

DNEs mentioned that lack of time is one of the major obstacles for patient education. They mentioned several reasons for it (including high workload and lack of clear job description, which led to other duties. For instance, secretarial work was delegated to nurses instead of patient education). A DNE in this regard said:

"Because we do not have a receptionist, I myself admit patients, teach patients. Even I receive visit fee, I do bank and official related tasks. I clean my room, we have no orderly."(Nurse #11)

And another nurse said:

"I do not have enough time to educate and follow up every patient." (Nurse #8)

In addition, DNE faced with lack of patients' interest. Patients were not interested in educational classes. Illiterate patients, lack of belief in the importance of nurses' educational role, free education, lack of physician collaboration have been formed in this concept.

One of the nurses said:

"Illiteracy is a problem we have with patients. Therefore, they cannot understand the importance of their health… We need force to attract illiterate clients; I must work with them too hard to attract them for education."(Nurse #7)

Patients do not believe in the importance of nurses' educational role. It was a challenge for nurses to play their educational role. One nurse participated in focus group said:

"Some patients do not cooperate with us. They consider us as a secretary because we take the patients' bill." (Nurse #3).

Free education was assumed as another barrier leading to lack of patients' interest in educational classes.

"They see that my classes are free, and I cannot force them for participation. They come just two sessions. I try everything to attract them, but they often have an excuse, they do not care… Free education makes it worthless." (Nurse #7)

Lack of physician' cooperation for referring patients to educational classes was another barrier.

"The biggest problem that I feel is that our doctor does not have any coordination with me. I have repeatedly stressed that doctor must tell patients that they must come to class or at least ask them did they attend class or not... But unfortunately he does not this." (Nurse #8)

Another nurse said:

"Doctors never refer patients to me. Patients come while they have poor diabetes management, but the doctor does not check to see if the patient is educated, if the patient meet nutrition expert. Doctor does not refer them, so I cannot see what the problem is, for example does she or he inject correct insulin dose?" (Nurse #7)

Unstructured education

Lack of educational needs assessment, lack of evaluation of education effectiveness, and discontinuing patient education was prominent issues in patient education process. DNE do not have adequate opportunity to determine the patients' educational needs, and provide education based on each patient's individualized needs because of high workload. One of the nurses said:

"Maybe I meet patient's emergency needs… but if I want to assess every patient's educational needs, and plan for it… oh, no... I do not have such an opportunity." (Nurse #8)

On the other hand, most nurses were not aware of the necessity and importance of educational need assessment. It was probably due to lack of training. Ignorance of educational needs assessment leads to patients' unwillingness for education. One of the nurses in this case said:

"Every week we have a four-session class. Finally, maybe 10 clients come, but sometimes it is less than it. I think that this is not their problem. They are right. For example, a patient told me that she/he had came to this class many times. Yeah, she/he is right; maybe we call some patients many times. So this class is really boring for him/her." (Nurse #12)

There is no plan to evaluate education effectiveness. Therefore, DNEs do not know patients' learning level after patient education, and they assume that providing education is enough and effective. One of the nurses participated in focus group referred to her experiences and said:

"I've asked patients later, I have asked them some questions as feedback. For example, if previous nurse wrote that she/he learned foot care. I asked him purposely about foot care, but he did not know. Actually he did not learn." (Nurse #5)

Lack of facilities was an effective factor on follow-up patient care plan especially evaluation of training effectiveness. One nurse in the focus group said:

"I do not have a direct line for phone, we have indirect line. If I want to call patient to know she/he would came or not, or to ask if she/he connected with diabetes center or not, it takes an hour." (Nurse #3)

Lack of continuity was another issue in patient education. This concept refers to the lack of planning for continuing education to cover unmet or new patients' educational needs. According to the patients' records, many patients have not received more than a half-hour educational sessions over several years.

Unmanaged education

There has been no official planning for patient education and supervising the education process in diabetes centers. There is no evidence of formal planning and certain budgeting for education. Nurses have not received an instruction or guideline about the number of educational sessions, teaching methods, and learning assessment. One nurse participated in the focus group said:

"When they wanted to give employee' communiqué, they behaved in a manner that it seems very simple. For example, they told me that it had no effect on my working hours, oh just I had to fill out records with doctor a day or two days a week." (Nurse #6)

In addition, a physician who had several years of management experience in the diabetes center in a county believed that:

"Education should be ongoing in the system, budget must be certain. It must be clear that patient must pass this class. The number of required educational session for each patient must be clear. I mean it must be planned, but there is no such a program."

Besides the above problems, there was no monitoring on patients' education process in diabetes centers. One of the nurses in the focus group said:

"They just want us a list every three months. They never asked me information that is more detailed. For example if I provide a list of 320 patients with diabetes, it is no matter how many patients received education, how many patients came to sit down a few minutes and listened to what I said." (Nurse #3)

There is no formal and documented tool to monitor the patients' education process. In the report sheet, which assesses patient's status, treatment and follow-up every three months, no item is not allocated to check the status of patients' education. Here, one nurse said:

"We have not any instructions, so I do not know what inspector wants to audit. They themselves do not know what they should control." (Nurse #7)

And another nurse said:

"The most important part of a diabetes care is education, but education is the last sheet in patient's record. Its related sheet is factitious and spurious, it is not real sheet" (Nurse #2)

DISCUSSION

Although planning and implementing educational interventions is cost-consuming, but serious investment in training people with diabetes will reduce economic burden of diabetes on the patient, family and national health system. Boren and *et al*.'s (2009) review showed that benefits of education (about lifestyle modification and self-management improvement) are more than costs spent on providing education. In other words, education is a cost-effective intervention.[31] Since people with diabetes should be educated by experienced educators who passed courses on diabetes management and patient education and participate regularly in continuing education courses,[8,11] some investment on the patient education should be focused on training educators. World Health Organization (WHO) also in its 2008–2013 action plan on the global strategy for the prevention and control of non-communicable diseases emphasized on promoting the education of doctors, nurses and other health personnel and planning for continuing education at all levels of health systems.[32]

The three themes of this study (unequipped trainers, unstructured education, unmanaged education) suggests serious challenges in investment to create infrastructures for proper training especially for training qualified human resources for patient education. Diabetes education is assigned to inexperienced nurses who did not pass any educational courses in diabetes management and education. Although a two to three days training course for nurses has been predicted in the National Diabetes Prevention and Control Program, and its related guideline has been written and sent to all medical universities,[26] this program is however not implemented.

Inexperienced nurses with insufficient knowledge in education of patients with diabetes, as well as other problems such as lack of time, lack of educational facilities was involved in patient education failure.

Nurses who did not know the underlying assumptions of adult learning[33] have hold educational classes for patients without determining and considering patients' individualized educational need. Such programs especially classes with repetitive issues led to the lack of patients' interest in classes.

Findings of Diabetes Attitudes, Wishes and Needs (DAWN) program suggested that considering individual circumstances, educational needs and psychological barriers to diabetes management are the main components of treatment and care planning for patients with diabetes.[34] Also Azimi *et al*. in a mixed method study, using the Delphi approach, concluded that the most important barriers for patient education are nurses with low scientific knowledge and information, nursing staff shortages, busy nurses, lack of supervision and feedback system, teaching hospitals (since teaching hospitals impose additional work to nurses, so they face time constrain).[35]

It seems that there has been inadequate investment not only in training human recourses for patient education, but also in providing educational facilities, and in providing guidance, surveillance and control systems for patient education process. It seems that despite the importance and priority of patient and family education in National Diabetes Prevention and Control Program,[26] this importance and priority has not well gone beyond paper.

Amini *et al*.'s study (2007) in 25 provinces (in Iran) during 2003–2005 showed that only one-fifth of patients had received the necessary education in diabetes and only 13% received nutrition education.[36] Findings of Amini and current study that were both in diabetes centers and units are consistent to the findings of several studies, including Abdulhadi and Al-Adsani's study.[37,38]

Abdulhadi *et al*. (2007) in a qualitative study from the perspectives of type 2 diabetes patients found two themes including insufficient access to health education and inexperienced doctors and nurses in patient–provider interaction. Many patients did not interact with their health educators or dieticians, irrespective of the duration of their diabetes.[37] Al-Adsani *et al*. (2007) assessed effectiveness of diabetes care program on the quality of care in Kuwait in four years. They found that only in one or two of the five surveyed diabetes clinics, there were activities in patient education, but this was unstructured education and unrelated to treatment programs for patients.[38]

According to our findings, nurses were not justified about their teaching roles. They did not have the proper educational environment. There was no evidence of continuing education and evaluation of the effectiveness of patient education. Plans or instructions on educational planning have not been distributed among nurses. Nurses' educational functions have not been questioned due to lack of surveillance systems for managing patient education. While the 9th and 10th standards for diabetes self-management education were devoted to planning for patients follow-up, support, learning assessment,[8] lack of monitoring systems for patient education process led to the unstructured education and nurses' dissatisfaction.

In summary, despite considering patient education as one of the important strategies in National Diabetes Prevention and Control Program, there has not been necessary investment to achieve it. In addition, patient education was not structured and based on scientific principles. However, if we consider that this program was introduced less than a decade ago, it can be concluded that some existing problems in the patient education process are expectable.

It seems that close surveillance as well as regular and continuous training programs for diabetes education providers, including nurses can provide an opportunity to overcome many shortcomings in patient education.

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