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What Do Iranian Diabetic Patients Know about Diabetes? - A Review

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Abstract

It is well established that knowledge is the key factor in optimal diabetes control. Adherence to the medical treatment and the healthcare provider's advice is associated with the level of knowledge about the health issue. The diabetic patients with acceptable knowledge about diabetes achieve better glycemic control. Since diabetes cause is multifactorial, it is necessary for patients to have knowledge in various aspects of diabetes.

This review investigates the diabetes knowledge status in Iranian people with diabetes. Most of the previous studies were conducted on type 2 diabetes. Based on the topic, the studied conception was divided into three categories including general knowledge, nutrition and complications. According to the reports, Iranian diabetic people have inadequate knowledge about different aspects of diabetes. A number of factors such as age, educational level, job status and income had a significant relationship with patients' knowledge. Considering the central role of the educational level in improving the level of diabetes knowledge, it is necessary to plan educational programs as much as possible, especially for illiterate or less educated patients.

Keywords: Diabetes, Knowledge, Review

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Introduction

Despite the progresses made in medical science, human life is still threatened by various diseases, including diabetes (1). Diabetes is a serious chronic metabolic disease characterized by high blood glucose levels (2). Diabetes can cause significant complications, affecting multiple organs of body (micro and macrovascular complications) that in addition to mental and emotional injuries have a negative impact on the quality of life (3).

According to the International Diabetes Federation, globally, 537 million adults (20-79 years) are living with diabetes which is predicted to rise to 643 million by 2030 and 783 million by 2045. Based on our knowledge the prevalence of diabetes in Iran has increased continuously since 8.4 in 2004 to 13.2 in 2016 (4).

Multiple risk factors of diabetes and complications make it necessary to improve the management of blood sugar control (5). It is well established that knowledge is the key factor in optimal diabetes control, in other words, patients with proper knowledge of diabetes and its complications follow a suitable treatment and health care plan (6). A previous study stated that among all the three variables that are important of managing diabetes- knowledge, attitude and practice (KAP)- knowledge obtained a high degree of importance to control diabetes (7).

Since diabetes is multifactorial, it is necessary for patients to have knowledge in various fields including medications, diet, physical activity, self-blood glucose monitoring, and foot care in order to manage the disease (8).

Investigators implying that diabetes knowledge, as a protective factor, enhances the efficiency of self-management for type 2 diabetes mellitus (T2DM) (9). Furthermore, it was reported that adherence to medical treatment and the healthcare provider's advice is associated with the level of knowledge about the health issue (10) and patients with sound knowledge achieving better glycemic control (11). Moreover, increasing knowledge regarding diabetic foot, as a complication, improves positive attitudes and better practices toward prevention (12). Considering the role of poor knowledge in disease progression and increasing treatment costs (13) and the effect of increasing awareness in controlling and preventing complications of diabetes, this study was conducted with the aim of investigating the knowledge status of Iranian patients with diabetes in the field of this disease.

1) General knowledge

General knowledge of diabetes includes sign and symptoms, glucose monitoring, diet, physical activity, and complications which were considered in most studies. In this term patients' knowledge varied from moderate to adequate level (14-19) and, just one study, reported the knowledge level of the participants as poor (20). While knowledge has the key role in controlling diabetes (21,22) and trained patients perform more correctly in managing the disease (23), there is still a serious need to educate patients in various fields of diabetes.

Regarding association factors to general knowledge, one study has stated no significant relationship between level of education and diabetes knowledge (14), while in several studies higher education level was significantly associated with higher diabetes knowledge (15-17,24).

In relation to the age, some studies indicated a significant association between age and knowledge level (20,24) which in one study, until the age of 50, the mean score of knowledge increased with age, but after the age of 50, this mean score decreased**.** In another study, it was reported that the level of knowledge decreases with aging (20).

Positive family history was another factor related to high scores of patients' knowledge with T2DM (20). There was no significant

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correlation between gender and participants' knowledge score.

While all the mentioned studies were conducted on patients with T2DM, only one study investigated the knowledge of teenagers with type 1 diabetes mellitus (T1DM). Adolescents' knowledge was evaluated at an adequate level, and the duration of diabetes and positive family history were affecting factors in better knowledge (19,26). It should be noted that in the elderly population (age> 60), the factors related to diabetes knowledge have not been evaluated (25).

2) Nutrition/diet

According to the ADA report, patients with diabetes can have a very good control over their blood sugar by reducing the overall carbohydrate intake (26). Therefore, it is necessary for patients to be aware of nutritional recommendations in diabetes. After the general knowledge of diabetes, nutritional knowledge was the most commonly investigated topic among diabetic patients. Knowledge regarding the number of calories/ carbohydrates and grams of fat in foods, number of meals, type of food and, cooking food suitable for diabetics, was investigated in some studies but, the adequacy of this knowledge was not determined among the participants (27,28). Another study, the knowledge of patients regarding the relationship between different foods and obesity, fasting blood sugar, blood pressure and blood lipid profile, was evaluated in adequate level (29). Some researchers measured the knowledge based on the stages of change (One of the constructs of the Trans theoretical model). They stated that diet knowledge regarding the effect of weight loss as a way to better control of blood glucose, was poor (30). Moreover, their findings showed that people who were in the action stage of a health behavior had significantly more knowledge than the people who were in the earlier (pre-contemplation, contemplation and, preparation) stages (27,30). This result is a reconfirmation of the fact that people reach the stage of performing correct behavior when their knowledge in this field has already been improved.

The correlation between the level of education and nutritional knowledge was various in studies. Meanwhile, one study pointed out a positive correlation between the level of education and knowledge (29), another study found no significant difference between the knowledge of people with different educations (28). In addition, in one study a significant correlation between higher income and better nutritional knowledge was shown (25).

3) Complications

According to the report of the Centers for Disease Control and Prevention, heart disease, chronic kidney disease, neuropathy, and other problems with feet, oral health, vision, hearing, and mental health are common complications of diabetes (31). Among microvascular and macrovascular complications of diabetes, only three topics, foot care, retinopathy and oral health were studied in Iranian population. Despite the high prevalence (47%) of peripheral neuropathy in patients with T2DM in Iran (32), In the field of foot care, patients' knowledge was poor (33,34) to moderate (35,36) level. The least knowledge was in regards with "using of talcum powder or other powders between the toes", "avoid using lotion between the toes", "the trimming the toenails properly" (34), "the correct area to use ointment or cream on the feet" and "appropriate shoe materials" (35).

Several studies (33,35) indicated that higher education level was significantly related to greater knowledge. There were not significant correlation between gender and knowledge in foot care issue.

Considering age, based on the findings, there was a significant relationship between the age of patients and the average score of knowledge (36). The Job status was another variable that its significant association with foot care knowledge was proven (33,35), while age and place of residence showed less association with foot care knowledge (34).

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In the field of diabetic retinopathy, only one article (37) was available which was done on the population aged 20-83. Based on the results, most of the participants had the necessary knowledge about eye diseases. Furthermore, male gender, longer duration of diabetes diagnosis and higher income were associated with better knowledge. Considering that the knowledge of retinopathy was examined in only one study, it is not possible to accurately judge its adequacy among Iranian patients. Since the effect of knowledge on creating a positive attitude and modifying behavior has been proven several times (38,39), it is expected that this knowledge will increase the positive attitude towards care and in the next steps, the focus of interventions should be on improving the practice of patients regarding eye care.

Oral infections are another diabetes-related complication that has received less attention. In Iranian population oral health knowledge was investigated in both types of diabetes (type 1 and 2). In general, the knowledge of patients with diabetes in this field was not satisfactory (40,41). According to the result, half of the T2DM patients had poor knowledge about oral complications. The majority of them recognized dry mouth as a complication of diabetes, but a very small percentage attributed mouth burning to diabetes. Also, less than half of the people knew that regular use of toothbrushes and dental floss improves oral and dental diseases (40) and the majority of them were unaware of the abnormality of bleeding gums while brushing. Duration of disease, female gender (40) and level of education (42) were significantly associated with better knowledge in terms of oral health.

Among T1DM patients, the majority of them had low to moderate knowledge and place of residence (urban), and aging significantly increased oral health knowledge among adolescents. The lack of oral health knowledge of patients with diabetes can be attributed to the neglect of this issue by health care workers so; the need to inform the diabetic patients in this regard should be reminded to the health service providers.

It is necessary to note although knowing about cardiovascular disease as the most common diabetes complication (42), diabetic nephropathy as a major microvascular complication (42) and hypoglycemia as, an acute, treatment-related complication of diabetes (43), are important parts of the management of diabetes, comprehensive studies have not yet been conducted in these fields. As a result, it is very necessary to evaluate the knowledge status of patients with diabetes regarding these complications and how to care for and reduce the risk of these complications.

Conclusion

Iranian patients with diabetes have inadequate knowledge of various aspects of diabetes. More extensive studies in the field of investigating the knowledge of patients, especially in relation to diabetic complications, are needed in order to set a basis for future educational interventions. In addition, considering that education level, income and age were factors related to people's knowledge in different fields; it seems that focusing on increasing knowledge in patients with low education, lower income and older age is needed. In other groups, it is better for interventions to go beyond providing information and focus more on creating a positive attitude and modifying behavior.

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Conflict of Interest

There was no conflict of interest.

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Authors' contributions

PK.D. conceived and designed the study. D.S. extracted literature and prepared the draft. PK.D and D.S. contributed data analysis. MM.AB. and Q.M did critical review of paper. PK.D. did the final review. All authors read and approved the final manuscript.

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