

Knowledge and practice of foot care in Iranian people with type 2 diabetes

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ABSTRACT

The aim of this study was to determine the knowledge and practice of foot care in people with type 2 diabetes. We carried out a cross-sectional study. A questionnaire was completed by 148 patients with type 2 diabetes in Tehran, Iran. Knowledge score was calculated and the current practice was determined. The mean knowledge score was 6.6 (standard deviation ± 3.0) out of a possible 16. Illiterate patients were the least knowledgeable ($P = 0.008$). Lack of adequate knowledge includes the following: 56% not aware of the effect of smoking on the circulation to the feet, 60% failed to inspect their feet and 42% did not know to trim their toenails. High risk practices including use of irritants to water (66.5%) and walking barefoot (62%). The results of this study highlight the patients' inadequate knowledge of self-care about their foot and lack of optimal podiatry service in Iran. These findings have implications for further evaluation, planning and management of patient care in diabetic foot disease.

Key words: Diabetes • Foot care • Iran • Knowledge • Practice

INTRODUCTION

Diabetes mellitus is a serious, common and potentially disabling chronic disease. In 2003, the global prevalence of diabetes was estimated at 194 million. This figure is predicted to reach 333 million by 2025 as a consequence of longer life expectancy, sedentary lifestyle and changing dietary patterns. This rise is likely to bring a proportional increase in the numbers of people with diabetes complications, including foot problems (1–3). People with type 2 diabetes are prone to develop foot ulcer and amputation if they do not have correct foot

care practice (4–7). Although there is a large amount of literature on the diabetic foot and the importance of foot care, there are few studies about foot care knowledge and practice in Iran. Therefore, we carried out a cross-sectional study, with the aim of determining knowledge about foot care and its practice in Iranian people with type 2 diabetes.

MATERIALS AND METHODS

A cross-sectional study was carried out in all eligible patients with type 2 diabetes who enrolled in the diabetic clinic in Firoozgar Teaching Hospital affiliated to Iran University of Medical Sciences after obtaining the ethical approval irrespective of age, duration of diabetes and treatment. Those unable to answer the questionnaire because of dementia, psychosis or profound deafness were excluded from the study. Subsequently, we designed a questionnaire to measure knowledge and practice, based on the principles of diabetic foot care deemed important by the team and

Key Points

- people with type 2 Diabetes are prone to develop foot ulcer and amputation if they do not have correct foot care practice
- although there is a large amount of literature on the diabetic foot and the importance of foot care, there are few studies about foot care knowledge and practice in Iran
- we carried out a cross-sectional study, with the aim of determining knowledge about foot care and its practice in Iranian people with type 2 diabetes

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our impression of the common misconceptions of our patients. In addition, recommendations by the American College of Foot and Ankle Surgeons and the Diabetes UK were employed to design the questionnaire. The questionnaire consists of 16 questions on knowledge. The foot care practice section comprises four questions on foot self-examination, three questions on footwear, two questions about care of the toenails and seven questions about foot hygiene. In addition, there were sections on personal and medication data. For construction and content validity, the questionnaire was reviewed by five doctors and one nurse until there was agreement as to the questions and their wording. Questions with multiple-choice answers were used. We tested the questionnaire for face validity in a pilot study on 15 patients to see if patients found the questions acceptable and understood the wording in Persian language. The survey was administered in the clinic to the subjects as they came for their regular follow-up appointments from October 2006 to March 2007. The researchers (KM and VN) interviewed the subject using the questionnaire.

Data were analysed using Statistical Package for Social Sciences (SPSS for Windows). The chi-squared test, independent *t*-test and analysis of variance were used.

RESULTS

Demographic

One hundred and forty-eight participants were assessed at their regular clinic visit. Of the 148 participants, 97 (65.5%) were women and 51 (34.5%) were men. Their mean age was 56 years (range 18–81 years). Thirty-two (21.6%) participants were employed, eighty six (58.1%) were household and twenty eight (18.9%) were retired. One hundred and forty-five (98%) participants were married. Thirty one (20.9%) were illiterate and eighty (54.1%) had 1–12 grade education. The type of treatments is shown in Table 1. Duration of diabetes was less than ten years in approximately 60% of participants (Table 1).

Knowledge score

The maximum possible knowledge score was 16. The mean was 6.6 [standard deviation (SD) ±3.0] and ranging from 0 to 13. Patients who had higher level of education (above 12 grade) had a significant higher knowledge score than

Table 1 The characteristics of study sample

Variables	<i>n</i>	%
Gender		
Female	97	65.5
Male	51	34.5
Age (years)		
<50	34	23.0
≥50	114	77.0
Marital status		
Married	145	98.0
Single	3	2.0
Employment		
Employed	32	21.6
Unemployed	2	1.4
Household	86	58.1
Retired	28	18.9
Education		
Illiterate	31	20.9
1–12 grades	80	54.1
≥12 grades	37	25.0
Diabetes treatment		
Oral agents + diet	96	64.9
Insulin + diet	18	12.1
Insulin + diet + oral	34	23.0
Duration of diabetes (years)		
≤10	90	60.8
>10	58	39.2
Smoking		
Yes	14	9.5
No	125	84.5
Former	9	6.0
BMI (kg/m ²)		
≤25	36	24.3
>25	112	75.7

BMI, body mass index.

other groups (*P* = 0.008). Patients who had diabetes more than 10 years were more knowledgeable than those who had diabetes less than 10 years (7.1 versus 6.2, *P* = 0.07) (Table 2) however this was not statistically significant.

Practice score

Table 2 summarises the score of practice of foot care. The maximum possible practice score was 16 and ranged from 1 to 13. The mean was 8.3 (SD ±2.6). The mean score of practice about foot care was higher in more educated patients, who have more than 12 grades of education, than in other groups (*P* = 0.004). There was no statistically significant difference between practice scores in patients with the duration of diabetes more than 10 years and less than 10 years (*P* = 0.89).

Key Points

- one hundred and forty-eight participants were assessed at their regular clinic visit
- of the 148 participants, 97 (65.5%) were women and 51 (34.5%) were men. Their mean age was 56 years (range 18–81 years)
- to our knowledge, this is the first study to measure the knowledge and practice about foot care in Iranian patients with type 2 diabetes

Key Points

- the findings of this study showed a lack of adequate knowledge about foot care in this group of patients with type 2 diabetes
- the results of our study revealed that less educated patients with diabetes (21 % of total study sample) are the least knowledgeable about the care of their feet
- majority of these patients (70%) were also reported that they did not receive any advice or information on their foot care
- approximately more than half of all patients were unaware that smoking can affect the circulation to the feet and the majority of patients did not know that they should wash their feet daily and how to trim their toenails
- they were unaware that they should inspect their feet (60%) and footwear daily (70%) according to the standard guidelines
- it indicates that the importance of foot care education for patients with diabetes has not been emphasized in Iranian health care system

Table 2 The mean score of knowledge and practice of diabetes foot care

Variables	Practice score (mean ± SD)	P value	Knowledge score (mean ± SD)	P value
Gender		0.21		0.37
Female	8.1 (2.5)		6.4 (3.0)	
Male	8.5 (2.7)		6.9 (2.9)	
Age (years)		0.20		0.92
<50	8.6 (2.3)		6.6 (2.8)	
≥50	8.2 (2.7)		6.6 (3.0)	
Marital status		0.79		0.83
Married	8.3 (2.6)		6.6 (3.0)	
Single	8.0 (2.6)		7.0 (1.7)	
Employment		0.68		0.42
Employed	8.5 (2.8)		7.2 (3.0)	
Unemployed	8.0 (1.4)		8.5 (0.7)	
Household	8.1 (2.5)		6.5 (2.9)	
Retired	8.7 (2.7)		6.2 (3.4)	
Education		0.004		0.008
Illiterate	7.2 (2.2)		5.5 (2.6)	
1–12 grades	8.2 (2.6)		6.5 (2.9)	
≥12 grades	9.3 (2.5)		7.7 (3.1)	
Diabetes treatment		0.83		0.92
Oral agents + diet	8.3 (2.7)		6.5 (3.1)	
Insulin + diet	8.6 (2.6)		6.7 (2.9)	
Insulin + diet + oral	8.1 (2.4)		6.7 (2.8)	
Duration of diabetes (years)		0.89		0.07
≤10	8.1 (2.6)		6.2 (3.0)	
>10	8.5 (2.6)		7.1 (2.9)	
Smoking		0.21		0.12
Yes	7.4 (2.4)		5.0 (2.2)	
No	8.4 (2.5)		6.8 (2.9)	
Former	7.4 (3.7)		6.5 (4.2)	
BMI (kg/m ²)		0.92		0.80
≤25	8.2 (3.1)		6.5 (3.4)	
>25	8.3 (2.4)		6.6 (2.9)	

BMI, body mass index; SD, standard deviation, $P < 0.05$ is significant (indicated in bold).

DISCUSSION

To our knowledge, this is the first study to measure the knowledge and practice about foot care in Iranian patients with type 2 diabetes. The findings of this study showed a paucity of knowledge about foot care in this group of patients with type 2 diabetes. The overall mean score of knowledge seems below of expected average. The results of our study revealed that less educated patients with diabetes (21% of total study sample) are the least knowledgeable about the care of their feet ($P = 0.008$). Majority of patients (70%) were also reported that they did not receive any advice or information on their foot care. Approximately more than half of all patients were unaware that smoking can affect the circulation to the

feet. Majority of patients did not know that they should wash their feet daily and how to trim their toenails. Even they were unaware that they should inspect their feet (60%) and footwear daily (70%) according to the standard guidelines (8,9). The smokers were less knowledgeable than non smokers. Although this difference was not statistically significant ($P = 0.12$), it could be an alarming sign because this group is more prone to develop foot complications such as ulcer and amputation in their future life. The interesting finding is that duration of diabetes has no effect on patients' knowledge and practice. It indicates that the importance of patient education should be highlighted in the health care system. Some other reports also showed similar results (10–12).

The results of this study showed some undesirable practices that are known to increase the risk of diabetic foot problems. Majority of participations did not inspect inside of footwear, did not know how to inspect feet regularly, did not know how to trim toenails straight across and did not know how to use suitable footwear. More than half of the patients did not have their feet measured when they last purchased footwear, and only 30% received advice and information about their daily practice of foot care. Those patients who had a higher practice score were also more likely to have higher education. The possible explanation is that educated patients compared with illiterate patients are able to obtain and read necessary information more easily. Our findings are in accordance with similar studies (11,12).

Culture may play an important role in adherence to foot care advice. Although all the participants in our study were Muslim and they should have washed their feet three to five times per day, they stated that they did not inspect their feet carefully. Therefore, appropriate culturally health education method should be provided particularly for different communities (13,14).

There are good evidences that foot complications are preventable by appropriate foot care and education programme (15–18). This study has been successful in highlighting those areas of foot care knowledge and practice that are deficient in people with diabetes in Tehran, capital of Iran. It has identified practices that put patients at risk of developing foot problems and the barriers to good foot care practice. These findings will be used to guide a health education programme on foot care for Iranian people with diabetes.

The findings of this study have also shown that knowledge and practice appeared to be associated. This further supports the argument that motivation for increasing knowledge with diabetes education is needed for people to reach desirable practice.

LIMITATIONS

This study has some limitations, the same as other studies. First, participants were from urban areas. Second, most of the practice data

are self-reported and may be more optimistic than reality.

CONCLUSIONS

The results highlight paucity of knowledge on foot care in this group of diabetics. The findings have implications for further evaluation, planning, and management of diabetic patients in Iran and the need for provision of podiatry service in all diabetes clinics.

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Key Points

- this study has been successful in highlighting those areas of foot care knowledge and practice that are deficient in people with diabetes in Tehran, capital of Iran
- these findings will be used to guide a health education programme on foot care for Iranian people with diabetes

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