

Knowledge, attitude, and practice of foot care in patients with diabetes at central rural India

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ABSTRACT

Introduction: Diabetic foot syndrome is one of the common and most devastating preventable complications of diabetes mellitus (DM). It is associated with morbidity and premature mortality due to long-term complications affecting foot. The American Diabetes Association recommends that people with diabetes should have a comprehensive foot examination once per year. Most of the foot problems can be prevented with careful foot care. It may take effort and time to build up good foot care habits, but self-care is essential. **Aim:** The main aim of the study is to analyze the knowledge, attitude, and practice of foot care in patients with DM in central rural India. **Methodology:** This study was conducted at a rural educational hospital in central part of India over 200 patients who have Type 1 and Type 2 diabetes. They were evaluated for their knowledge about foot care and footwear practices. A structured and validated questionnaire was administered to cases. **Results:** Around 82.9% of the patients were aware of the disease and 23.2% were aware of the complications of the DM. In 63% of the patients, foot care examination and education regarding foot complications were not suggested by their treating physicians. Annual examination of feet by the physician and self-examination were not known facts to the diabetic population. **Conclusion:** It is necessary to firstly develop awareness of diabetes mellitus and the related complications, one amongst which is foot care. Certain educational strategies should be established for both the consultant physician and also the common man to create awareness for effective foot care.

Keywords: Attitude, diabetes, foot care, knowledge, practice

Introduction

Diabetic foot syndrome is one of the common and most devastating preventable complications of diabetes mellitus (DM). It is associated with morbidity and premature mortality due to long-term complications affecting foot. Lower extremity disease, which includes foot ulceration, peripheral neuropathy, peripheral arterial disease, or amputation, is twice as common as in people with diabetes when compared with healthy individuals. In DM, the annual incidence of foot ulcer ranges from 1.0%–4.1% to 4%–10% of prevalence rate, which suggests that the lifetime incidence may be as high as 25%.^[1] The prevalence of foot problems is higher in low socioeconomic groups due to poor

glycemic control and improper care of foot. The direct and indirect cost involved in the treatment of foot problems in patients with diabetes is enormous. There is an urgent need to implement preventive measures to reduce the cost burden of the patients and the society. The American Diabetes Association recommends that people with diabetes should have a comprehensive foot examination once per year.^[2] Most of the foot problems can be prevented with careful foot care. It may take effort and time to build up good foot care habits, but self-care is essential.

Furthermore, the use of inappropriate footwears such as chappals which has a rubber sole and supported by a strap in the first interdigital space, but has no back strap, exposes the feet to injury. Shoes when worn tend to be pointed and thus further expose the foot to injury.

Along with this, the practice of not wearing socks results in a hyperkeratotic and fissured heel or a callosity of the first

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How to cite this article: Taksande BA, Thote M, Jajoo UN. Knowledge, attitude, and practice of foot care in patients with diabetes at central rural India. *J Family Med Prim Care* 2017;6:284-7.

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Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/2249-4863.219994

interdigital space or injury to the great toe. Hence, this study was planned.

Aim

The main aim of the study is to analyze the knowledge, attitude, and practice of foot care in patients with DM in central rural India.

Methodology

Study setting

This study was conducted at a rural educational hospital in central part of India over 200 patients with Type 1 and Type 2 diabetes.

Duration

The study duration was 1 year from 2011 to 2012.

Study design

It was a hospital-based cross-sectional study.

Patients with Type 1 and Type 2 diabetes were evaluated for their knowledge about foot care and footwear practices. A structured and validated questionnaire was administered to cases [Table 1].

Study participants

Inclusion criteria

All patients above 18 years of age who are a known case of DM were included in the study (on lifestyle modification or oral hypoglycemic or insulin or both or all of them).

Exclusion criteria

The exclusion criteria were as follows:

1. Patients who denied consent to be part of the study
2. Patient who is already having diabetic foot, amputated foot, or foot ulcers.

Informed consent

All eligible patients selected for the study were asked for written informed consent in local language after getting approval from the Institutional Ethics Committee.

Statistical analysis

All data were entered into MS Excel software and analyzed after verifying and cleaning. All statistical analyses were performed using statistical analysis software Epi info 6 by CDC, Atlanta, Georgia (USA).

Results

Baseline characteristics of the study population ($n = 200$) [Table 2].

Results

- Of 200 patients, 184 (92%) had Type 2 DM and 16 (8%) had Type 1 DM. The mean duration of the diabetes was 10.6 ± 8.2 years

Table 1: The structured questionnaire

Knowledge regarding diabetes mellitus
Knows about the diabetes
Knows about its complications
Knows about normal blood sugar
Knows about normal blood pressure
Knows what to eat in diabetes
Knows what is the role of exercise
Knows that he/she should take foot care
Knows that he/she should check his/her eye annually
Attitude toward foot care
Do you examine your feet daily?
Has your physician told you how to take care of feet?
Does your doctor examine your feet on your every visit to the doctor?
Did your doctor tell you the complications of diabetes in the feet?
Did your doctor tell you which type of footwear to wear?
Did your doctor tell you to examine your feet daily?
Practice of foot care in the diabetes
What type of footwear do you wear?
Do you examine your feet everyday?

Table 2: The Baseline characteristics of the study population

	Mean±SD
Age (years)	54±10.92
Sex (male:female)	1.36:1
BMI (kg/m ²)	22.87±3.59
SBP (mmHg)	135.84±19.11
DBP (mmHg)	84.70±19.11
PPBS (mg/dl)	242.16±73
FBS (mg/dl)	187±69.04

BMI: Body mass index; SBP: Systolic blood pressure; DBP: Diastolic blood pressure; PPBS: Phosphate-buffered saline; FBS: Fasting blood sugar; SD: Standard deviation

- Around 82.9% of the patients were aware of the disease and 23.2% were aware of the complications of the DM
- In 63% of the patients, foot care examination and education regarding foot complications were not suggested by their treating physicians
- Preferred footwear found to be used by 84.5% population was open footwear called chappals with no heel counter and forking of toes by a divider. Significantly, 29 (14.5%) diabetics walked barefoot both outdoors and indoors. Two patients were found to use shoes without socks most of the daytime, and none of the diabetics wore specially designed orthotic shoes
- 68 (34%) patients provided history of leg discomfort in the form of tingling numbness, burning, fatigue, and cramping or aching (claudication). Symptoms were located mainly in the feet and calves
- Only 7 (3.5%) patients had undergone feet examination by the physician in the past. Those who underwent feet examination were mainly admitted for some or the other causes and underwent examination during that time. None of the patients did self-evaluation of the foot daily. Annual examination of feet by the physician and self-examination were not known facts to the diabetic population. They are unaware of these facts.

Discussion

Our study showed that less education, poor socioeconomic status, and unawareness of foot care were contributing factors of improper footwear practices, which increases the risk for diabetic foot.

The same was shown by Shah *et al.*, George *et al.*, and Ekore *et al.*^[3-5] Chellan *et al.* and Saurabh *et al.*^[6,7] observed an inverse relationship between diabetic foot ulcer and foot care knowledge as well as practice as seen in our study also. Shah *et al.* and Ekore *et al.* observed that foot care and education to prevent complications were least suggested by doctors. The same findings were noted in our study that the treating doctors impart very few minutes to the patients with diabetes and many do not even educate the patient regarding foot care. The knowledge regarding diabetes was 82.9% and its complications were 23.2% almost same as that shown by Singh *et al.*^[8] The knowledge of foot complications was at the least of 8.5% also supported by Shah *et al.* and Saurabh *et al.* The attitude score toward diabetes was fair which was 86.3% as supported by Chellan *et al.* and Singh *et al.* However, the favorable footwear was chappals, rather than sandals with strap, floaters, or shoes, which provide better support to the feet as seen in the study by Surabh *et al.*

Hence, an insight and thought into the factors which leads to limb loss is essential. In a neuropathic foot, deformity, skin problems (corn and callosity), and infection precipitate limb-threatening complications. All these factors are entirely preventable or treatable. Seeking timely advice and treatment from the physician depends on patient's foot care awareness and education. Starting from the selection of appropriate footwear also depends on patient's education. This study highlights the ignorance in foot care knowledge and practices, which contributes to the serious consequences such as diabetic foot for injury, infection, or amputation. The evaluation done by us brings forward the poor educational status of Indian diabetics, and this is supported by various other studies.^[9-11] Khamseh *et al.* and Quinn *et al.* showed that patients with 2 diabetes with higher education had better knowledge than those with lower education. Quinn *et al.* also emphasized that the patients with lower education needed more information and knowledge about the diagnosis. The contributing factors for this predisposition are busy clinical practice of diabetologists, who in turn spare very little time for patients' education and awareness regarding diabetic foot care, associated with reluctant and ignorant attitude of many patients to follow foot care practices for long. Poor motivation from the patient's side to maintain optimum glycemic control, their negligent attitude toward infection, injury, and other symptoms related to the feet leads to a delay in timely consultation to their physician. To obtain regular follow-up, economic considerations may come in the way. However, an important component of these practices is selection of proper footwear.

Our data show a very poor choice of footwear used by our diabetic patients called chappals, which has no heel counter

and there is forking of toes by a divider. The situation is grim, but the morbidity can be restricted or averted by modifying the above-mentioned factors. Extra efforts should be put on patients' education on diabetes and its avoidable complications and their prevention. All newly detected diabetics as well as known diabetics should be educated about diabetes and its avoidable complications. At every visit, a detailed foot examination should be done by the treating diabetologist to rule out vasculopathy or neuropathy so as to identify the foot at risk.

Therefore, a joint effort on part of the doctor and the patient is required to provide and receive education, respectively, about foot care so as to reduce foot problems.

Our study reveals the importance of self-care which is mainly aimed for normal function, development, health, and well-being of the patient. However, the lack of knowledge due to low education status and the lack of timely information provided by the primary care physician to the patient need to be analyzed deeply and rethink is it only patient who is responsible or the ball is on our court also?

The physician's primary job is in providing knowledge and information to the patients regarding foot care so as to prevent complications.

Conclusion

It is necessary to firstly develop awareness of diabetes mellitus and the related complications, one amongst which is foot care. Certain educational strategies should be established for both the consultant physician and also the common man to create awareness for effective foot care.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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