Profile of Patients with Diabetes Taking Self Foot Care: Data from a Rural Teaching Hospital.

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Abstract

Objective: To find the frequency of patients with diabetes, taking proper self-foot care according to standard international practice guidelines and its result on foot health.

Methods: This cross sectional study was done in Department of Medicine at a rural teaching hospital included 100 patients with diabetes. Patients were probed for their foot care practices and those practicing more than 60% of American Diabetes Association (ADA) guidelines for foot care were labelled as practicing "Proper foot care". Foot examination was also performed and examination findings were compared with foot care practices.

Results: The mean age of eligible patients was 51.5+10.7 years. Only six (6%) patients were found to be following recommended foot care practices. Statistically significant correlations found between fungal foot infections and foot drying practices, proper foot hygiene & frequent foot washing and, in growing toe nails and improper nail trimming. Use of inappropriate footwear was associated with corns, callosities and ingrowing toe nails. It also showed that good foot care practice was associated with foot care education.

Conclusion: The study found that limited numbers of patients with diabetes were following appropriate foot care in accordance to the ADA Guidelines. High risk behaviours were usual which could cause serious, but preventable, foot complications.

Keyword: Diabetes, Diabetes education, Foot care, Prevention, Ulceration.

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Introduction

The proper foot care is very important in patients with diabetes. About 15% patients with diabetes suffers from foot ulceration in their life and in majority of the patients trauma, neuropathy, and deformity are present, which are the most common component causes for lower-limb ulcers.[1] The diabetic patient has major role in the prevention of foot disease and hence foot care education is important.[2] If patients with diabetes have enough knowledge about their medical condition, they are more likely to follow a treatment regimen. In the short term, proper foot care knowledge and behaviour of patients is likely to be positively influenced by patient education.[3-5]

In India, majority of patients with diabetes lack in proper attention to their foot care. One of the reasons regarding unawareness of the possible serious outcome of such neglect is deficiency of basic foot care education.[6] inappropriate foot care results in many complications that may lead to foot ulcerations and finally amputations. Poorly fitted footwear causes mechanical stress, forming corns and calluses.[7] Similarly keeping the foot wet for long time predisposes to fungal infections which may result in cellulitis.[8] To determine the real gravity of the problem, it is important to assess the foot care practices. The present study was designed to assess different patterns of foot care practices in patients with diabetes and also to evaluate the consequences of such practices on the clinical status of the feet. The impact of social and cultural aspects on foot care was also explored. The study outcome may help us to modify guidelines for diabetic foot care in relation to local cultural and socioeconomic background.

Patients and Methods

This cross sectional descriptive study was done in Department of Medicine at a rural teaching hospital.

Inclusion criteria: Adult patients with (type 1 or type 2) diabetes for minimum 3 years, Patients were physically independent and capable of self-care.

Exclusion criteria: active foot ulcers, congenital foot deformities, Charcot foot, amputed foot and visual disturbances.

It was estimated that per week about 15 patients could fulfil inclusion criteria. Expected frequency of "proper foot care" was 11%. Sample size was calculated to be 92, using 11% identified factor, at 95%

confidence interval. Sample size was rounded to 100 for extra outcome measures.

Non-probability convenience sampling method was followed. Prior to commencement of the study, the protocol was approved by the local institutional ethics committee. Informed verbal consent was obtained from eligible patients and the data was collected using a pre-tested study questionnaire. The questions were based upon recent ADA guidelines for standard foot care.[9,10]

Fifteen questions were framed (Table 1) and patients practicing 9 or more than 9 (more than 60%) guidelines were labelled as following "proper foot care". Data was collected regarding educational level, income per month, duration of diabetes, past history of &/ or previous hospitalizations due to foot infection and availability of foot care education.

A check-list for foot examination was also created to document the presence or absence of proper foot hygiene, corns and callus, skin texture, fungal infection, in growing toe nails and other deformities.

Statistical Analysis

To ensure consistency, the data was collected by investigators. All the data were checked and edited after collection. Then data were analysed with 'SPSS for Windows' version 12.0. For age, mean was estimated with standard deviation. For various foot care practices and examination findings, frequencies and percentages were calculated. The chi-square test was used to correlate the following variables: practices of foot care, foot examinations results, appropriate foot care according to the guidelines with regards to social background and the clinical history of diabetes. Considering ethical reasons proper foot care practice education was also provided to all participating diabetic patients.

Results

The study included 55 (55%) female and 45 (45%) male patients, with mean age of 51.57 ± 10.72 years. Only 2 females & 4 males i.e. 6 (6%) patients were practicing appropriate proper foot care. The frequencies and percentages of various foot care practices are shown in Table 1.

On foot examination, 32 (32%) patients found to have inappropriate foot hygiene & 50 (50%) patients with dry skin. 40 (40%) patients had corns and callosities. 48 (48%) patients had cracks and fissures. 35 (35%) patients showed in-growing toe nails.

43 (43%) patients had fungal infection (like Onychomycosis, Taenia pedis) and 21 (21%) had foot deformities (like claw toe or hammer toe, hallux valgus). 60 (60%) patients never underwent foot examination from any type of doctor and 40 (40%) patients underwent foot examination only once long time ago. No patient had regular foot examined by doctors.

The associations of foot care practices and examination findings are shown in Table 2. The association of proper foot care (outcome variable), with different social factors are illustrated in Table 3.

Table 1: Profile of foot care practices according to ADA guidelines (number=100)

Sr. No.	Foot care practices	Frequencies (percentages)
1	Patients who inspected feet daily	17 (17%)
2	Patients who washed feet once daily	20 (20%)
3	Patients who washed feet multiple times a day	73 (73%)
4	Patients who dried their feet properly after every foot wash	23 (23%)
5	Patients who applied emollients to their feet	27 (27%)
6	Patients who checked shoes before wearing them	25 (25%)
7	Patients who wore cotton socks	8 (8%)
8	Patients who walked bare feet	36 (36%)
9	Patients who trimmed their nails properly (straight, leaving the edges)	19 (19%)
10	Patients who wore correct fitting, low heel leather shoes	24 (24%)
11	Patients who self-treated their foot for problems like corns, callosities and trauma	21 (21%)
12	Patients who sat near heater/fire	16 (16%)
13	Patients who ever had foot examination by a doctor	40 (40%)
14	Patients compliant with anti-diabetic treatment	63 (63%)
15	Patients who smoked cigarettes	31 (31%)

Table 2: Associations of foot care practices with foot examination (number=100)

Foot care practices		Foot examination findings		P value	Chi-Square value
		Yes	No		
		Fungal infections			
Washing foot more than once per day	**Yes**	31	42	0.85	0.031
	No	12	15		
		Fungal infections			
Drying feet after every foot wash	**Yes**	3	20	0.001	10.936
	No	40	37		
		Healthy skin texture			
Application of emollient after foot wash	**Yes**	20	7	0.003	8.547
	No	30	43		
		Corns and callosities			
Proper fitted footwear	**Yes**	4	20	0.007	7.164
	No	36	40		
		In growing toe nails			
Proper fitted footwear	**Yes**	3	21	0.008	7.027
	No	32	44		
		Foot deformities			
Proper fitted footwear	**Yes**	2	22	0.358	3.228
	No	19	57		

Table 3: Correlation of proper foot care practice (number=100)

Independent variables		Proper foot care		
		No	Yes	P value
Educational status (primary and above)	**Yes**	62	5	0.380
	No	32	1	
Income - more than 10,000 Rupees/Month	**Yes**	23	3	0.167
	No	71	3	
Duration of Diabetes - more than 10 years	**Yes**	24	2	0.673
	No	70	4	
Past History of foot infections	**Yes**	31	3	0.39
	No	63	3	
Foot education given	**Yes**	32	6	0.001
	No	62	0	

Discussion

In this study, very few diabetic patients were found to be taking proper foot care and showed different patterns of behaviour. It was found that religion, cultural and social norms had affected many patients, who were not practicing proper ADA guidelines. Most of the patients were not drying up their feet, inspite of washing them many times a day.

Certain studies showed more number of cases of athletes foot in Muslims due to multiple times washing their feet in a day for before offering prayers.[11] But the present study found that higher frequency of foot washing affected foot hygiene but was not related with fungal infections.

In local population, field workers, housewives usually tend to have wet feet for long time. Only 23% of the patients were drying their wet feet regularly; and even they were not practicing drying of web spaces.

Worldwide many studies have shown poor foot care knowledge and practices among patients with diabetes. A study at 3 tertiary care hospitals of Rawalpindi showed that among 100 patients, only 34% patients examined their feet on daily basis, whereas 52% were unaware regarding correct technique of nail cutting.[12] In Iran, another study showed that 60% patients with diabetes were not examining their feet, 42% were not knowing how to cut their toe nails and 62% were walking without any footwear.[13] The results, from present study, were not less worrisome and high risk behaviour percentages were more alarming. The role of footwear in primary prevention of foot ulcers has been assessed in limited studies. But with growing

awareness, the patients with diabetes have realized that with use of good footwear, foot ulceration is preventable.[14]

Many studies have already documented that formation of corns and callosities, in growing toe nails are related to use of inappropriate footwear and same finding is observed in our study. Diabetic patient's education is essential to select appropriate footwear for routine use. It is known that person often prefers selection of footwear based upon cultural, social and local climatic conditions.[15] For fears of exaggerating symptoms of neuropathy, many patients with diabetes avoid use of socks and shoes in hot weather. Studies from UK and USA have reported that even after therapeutic footwear were made available free of cost, only few patients routinely used it.[16,17]

Our study also focuses on importance of promotion of foot care education for patients with diabetes. Only 38% patients with diabetes, in our study, received education regarding foot care techniques. Even after getting hospitalized for some foot infections, they did not realize the importance and basic steps for proper foot care. Only 8% patients could receive in-hospital education about proper foot care methods; out of 16% patients who were hospitalized because of foot infection. As stated earlier, practicing better foot care is directly associated with proper foot care education.

De Bernard found that the probability of regular feet checking was significantly more if the patients received proper foot care education and had undergone foot examination by health professionals.[18]

An intensive education program, using multiple educational approaches, to teach patients with diabetes regarding proper foot check-up methods, foot cleaning and appropriate footwear, significantly improved the foot care knowledge, attitude and practices of high risk individuals.[19] But certain other studies have found the contradictory evidence.[20]

Our study could not significantly correlate educational and socioeconomic status, even though both these factors are very important in practice of proper foot care. This could be due to small study population. However our study result suggests that ADA guidelines could be re-visited and implemented considering local cultural and social norms, for easy acceptance among patients with diabetes. Most crucial step in prevention of foot complications due to diabetes remains counselling diabetic patients about proper foot care and reinforcing it at each follow-up meeting.

Conclusion

Very less number of diabetic patients are practicing proper foot care. The stake holders should develop and direct implementation of diabetes education program with more focus on foot care.

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