Foot care knowledge and practice in diabetic patients attending the diabetic clinic at a tertiary care hospital, Multan

Ahmad Usman,[1] Muhammad Saad Farooq,[1] Shehryar Asif Malik,[1] Allah Yar Malik,[1] Usaid Malik,[2] Manahil[2]

Abstract

Background: Foot care is necessary for the diabetic patients.

Objective: To assess the knowledge and practices of diabetic patients regarding foot care and to identify the socio-demographic factors influencing them.

Methodology: This was a cross-sectional study, conducted on diabetic patients visiting the diabetic clinic in the outpatient department of Nishtar Medical University Hospital, Multan from January to March 2019. Non-probability convenient sampling was done to select 160 respondents, and their knowledge and practice were assessed by asking eleven questions in each category. Depending upon their answers, knowledge and practice of patients were classified into good, satisfactory and poor if their correct answers were ≥80%, 50 to 79% and <50% respectively. Data was analyzed by using SPSS version 25.

Results: The mean age of the respondents was 53.51±8.1 years The knowledge of 25.6%, 46.9% and 27.5% of the respondents was good, satisfactory and poor respectively. Regarding practice, 19.4%, 52.5% and 28.1% of respondents were in the good, satisfactory and poor category respectively. Education level and income had a significant association with both knowledge and practices. Duration of diabetes had a significant impact on the knowledge of the patients while the rural or urban residence of respondents significantly affected their practice.

Conclusion: The state of knowledge and practice of the patients of this region is unsatisfactory. Steps need to be taken to improve the knowledge of the patients which will, in turn, improve their practice decreasing the incidence of foot ulcers and resultant amputations.

Key Words: Diabetics, Diabetic foot, Foot care, Knowledge, Practices.

Introduction

Diabetes Mellitus (DM) refers to a group of metabolic disorders characterized by hyperglycemia.[1] Hyperglycemia may be caused by decreased insulin secretion, decreased glucose utilization and increased glucose production.[1]

All over the world, more than 425 million people are estimated to be the patients of DM, and this figure is estimated to rise to 629 million by the year 2045.[2] The figures provided by the WHO, diabetes country profile 2016 state that the prevalence of diabetes in Pakistan is 9.8%.[3] According to the report of the International Diabetes Federation, 7.47 million people had diabetes in Pakistan in the year 2017 in the age group of 20-79 years.[4,5] By 2045, it is expected that this number might increase to 16.1 million. According to their estimate, this number is expected to reach 16.1 million by the year 2045. In addition to this, another 8.3 million people have impaired glucose tolerance who also have a high probability of developing diabetes in the near future.[4,5,6]

DM has many complications like retinopathy, nephropathy, peripheral and autonomic neuropathy but one of the most prevalent and serious complications is the diabetic foot disease. A diabetic foot ulcer is a wound that traverses the full thickness of the dermis. Foot ulcers have a prevalence of about 4-10 % in the people diagnosed with DM. The lifetime incidence of diabetics developing foot ulcers is as high as 25%.[4] In Pakistan, a multicentric study showed that the prevalence of diabetic foot syndrome was 13.9%.[5] Five percent of the diabetics who develop foot ulcers have to get their feet amputated by the end of the 12 months.[6] The recurrence rate of foot ulcers is also very high, being greater than 50% after three years.[7]

Foot ulcers occur mainly because of neuropathy and therefore are readily preventable. Diabetic patients who are at risk need counseling, complete clinical examination of their feet and regular follow-ups for the prevention of development of ulcers. Certain habits and practices of the patients can also increase their incidence. Barefooted gait, wearing uncomfortable shoes, keeping poor glycemic control

1. Department of Community Medicine, Nishtar Medical University Hospital Multan.
2. Medical Student BUMD College Karachi.

Correspondence: Dr. AllahYar Malik, Associate Professor Department, of Community Medicine Nishtar Medical University Multan.

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and being oblivious to foot care regimens make the feet more prone to trauma and thus increasing the incidence of foot ulcers. Thus, foot ulcers can be prevented by following guidelines suggested by the International Working Group on Diabetic Foot.[8]

The objective of the current study was to evaluate the knowledge and practices among diabetics regarding foot care. Besides the fact that no similar study has been conducted in South Punjab, another motivation for carrying out the study was the observation of the authors that foot care was a very neglected practice here. It was therefore imperative to get an actual assessment of knowledge and practices and for identifying sociodemographic factors influencing them. The results of this study may help in making necessary changes in guidelines to make foot care more easy according to the social, cultural and religious background of this area of Pakistan.

Methodology

This cross-sectional study was conducted from January to March 2019 at the Diabetic Clinic of Nishtar Medical University Hospital, Multan, major tertiary care hospital catering to the needs of the whole Southern Punjab. On average, 3000 patients visit the diabetic clinic monthly.

Inclusion criteria for the study were diagnosed cases of type 2 DM for at least 12 months and ≥18 years old. While patients with type 1 DM, with a history of foot ulcers and healthcare professionals were excluded. After consulting the biostatistician, the Cochran formula was used to determine the sample size:

$n = Z^2pq/d^2$ N = Sample size. Z = standard normal deviation, set at 1.96 corresponding to 95% confidence interval. P=Prevalence of DM in Pakistan is 9.8%.[3] q = (1 – p). d=absolute precision set as 5%. The calculated minimum sample size was 136, but we included 160 respondents. Non-probability convenient sampling was used. The survey instrument used was a questionnaire adapted from the recommendations of the American College of Foot and Ankle Surgeons and pre-tested in previous studies.[9,10,11,12]

To assess the knowledge and practice regarding foot care, eleven questions were asked for each. SPSS version 25 was used for data analysis. Chi-square test was applied to find the association of demographic factors with knowledge and practices of foot care. Each correct response was assigned one mark and total knowledge and practice score for each respondent was classified as good, satisfactory and poor with score ≥80% (9-11), 50-79% (6-8) and <50% (<6) respectively. $P \leq 0.05$ was taken as significant.

Results

Out of 160 respondents, 91 (56.9%) were males and 69 (43.1%) were females. The mean age was 53.51±8.1. The socio-demographic characteristics of the patients are shown in Table I.

Table I: Characteristics of the study participants (n=160)

Variable	Categories	Frequencies (%)
Age	<60	125 (78.1%)
	>60	35 (21.9%)
Gender	Female	69 (43.1%)
	Male	91 (56.9%)
Marital Status	Married	148 (92.5%)
	Unmarried	12 (7.5%)
Residence	Rural	21 (13.1%)
	Urban	139 (86.9%)
Educational Status	Illiterate	55 (34.4%)
	Can Read Write	34 (21.3%)
	Matriculation	39 (24.4%)
	Graduate	22 (13.8%)
	Highly qualified	10 (6.3%)
Occupation	Manual work	64 (40.0%)
	Office work	29 (18.1%)
	Household/ Retired	67 (41.9%)
Income	<20,000	106 (66.3%)
	20,000-50,000	42 (26.3%)
	50,000-80,000	12 (7.5%)
Duration of diabetes	<10 years	66 (41.3%)
	>10 years	94 (58.8%)
Family history of diabetes	Yes	96 (60.0%)
	No	64 (40.0%)

Knowledge regarding diabetic foot care:

The mean knowledge score was 6.89±2.52. The minimum score obtained was 0 and the maximum 11. On classifying the knowledge score of the study subjects, 41 (25.6%) fell in the category of good knowledge, 75 (46.9%) in the satisfactory category and 44 (27.5%) in the poor category.

Table II: Distribution of the responses to questions for knowledge and practice

Questions related to Knowledge	*Correct (%)*	*Wrong (%)*
Taking medication regularly to avoid complications.	154 (96.3%)	6 (3.8%)
2. Inspecting their feet daily	94 (58.8%)	66 (41.3%)
3. First thing to do if redness/bleeding found between the toes.	113 (70.6%)	47 (29.4%)
4. Looking after their feet because they may not feel a minor injury to their feet.	130 (81.3%)	30 (18.8%)
5. Looking after their feet because wounds and infection may not heal quickly.	128 (80.0%)	32 (20.0%)
6. Looking after their feet because they may get a foot ulcer.	138 (86.3%)	22 (13.8%)
7. Smoking can be harmful for their feet.	102 (63.7%)	58 (36.3%)
8. Temperature of water to wash their feet in	57 (35.6%)	103 (64.4%)
9. Drying between their toes after washing.	80 (50.0%)	80 (50.0%)
10. Wearing shoes and socks	46 (28.7%)	114 (71.3%)
11. Inspecting the inside of the footwear.	60 (37.5%)	100 (62.5%)
Questions related to Practice	**Yes (%)**	**No (%)**
1. Taking medications regularly	148 (92.5%)	12 (7.5%)
2. Inspecting their feet regularly	105 (65.6%)	55 (34.4%)
3. Washing their feet regularly	151 (94.4%)	9 (5.6%)
4. Washing feet with warm water	83 (51.9%)	77 (48.1%)
5. Drying between their toes after washing	56 (35.0%)	104(65.0%)
6. Trimming the toe nails straight across and not too short	74 (46.3%)	86 (53.8%)
7. Cleaning nails with sharp instrument	31 (19.4%)	129 (80.6%)
8. Measuring their foot size when last they bought footwear	105 (65.6%)	55 (34.4%)
9. Inspecting the inside of their footwear	47 (29.4%)	113 (70.6%)
10. Wearing socks regularly indoors	42 (26.3%)	118 (73.8%)
11. Smoker or non-smoker?	21 (13.1%)	139 (86.9%)

Practices regarding diabetic foot care:

The mean practice score was 6.74±2.08, minimum score being 1 and maximum 11. On classifying the practice scores of the study, 31 (19.4%) respondents followed good foot care practices, 84 (52.5%) had satisfactory practice and 45 (28.1%) had poor practice.

Demographic factors affecting the knowledge and practice:

The study revealed that educational status and income had a significant association with both knowledge (*P*=0.000) and practice (P=0.000). Regarding diabetic foot care. Regarding practice showed significant association with the residence of the patients in rural and urban areas. (P=0.00) Duration of diabetes showed significant impact on the knowledge (*P*=0.01) but not on practice (*P*=0.440). Age and gender of the patients did not influence knowledge (*P*=0.897 and *P*=0.223 respectively) and practice (*P*=0.234 and *P*=0.391 respectively). Family history and occupation also did not show any significant association.

The analysis also showed significant association between knowledge and practice (*P*=0.001) showing good knowledge leads to good practice.

Table III: Association of demographic factors with knowledge and practice

Variables		Knowledge scores			
		Good	**Satisfactory**	**Poor**	**P-Value**
Education	**Illiterate**	3 (5.5%)	31 (56.4%)	21 (38.2%)	0.001*
	Can read write	6 (17.6%)	14 (41.2%)	14 (41.2%)	
	Matriculation	13 (33.3%)	19 (48.7%)	7 (17.9%)	
	Graduate	12 (54.5%)	8 (36.4%)	2 (9.1%)	
	Highly qualified	7 (70.0%)	3 (30.0%)	0 (0.0%)	
Income	**<20,000**	16 (15.1%)	52 (49.1%)	38 (35.8%)	0.001*
	20,000-50,000	20 (47.6%)	17 (40.5%)	5 (11.9%)	
	50,000-80,000	5 (41.7%)	6 (50.0%)	1 (8.3%)	
Residence	**Rural**	2 (9.5%)	10 (47.6%)	9 (42.9%)	0.104
	Urban	39 (28.1%)	65 (46.8%)	35 (25.2%)	
Duration of Diabetes	**<10 years**	15 (22.7%)	25 (37.9%)	26 (39.4%)	0.018*
	>10 years	26 (27.7%)	50 (53.2%)	18 (19.1%)	
		Practice score			
Education	**Illiterate**	1 (1.8%)	30 (54.5%)	24 (43.6%)	0.001*
	Can Read Write	4 (11.8%)	18 (52.9%)	12 (35.3%)	
	Matriculation	11 (28.2%)	21 (53.8%)	7 (17.9%)	
	Graduate	10 (45.5%)	10 (45.5%)	2 (9.1%)	
	Highly qualified	5 (50.0%)	5 (50.0%)	0 (0.0%)	
Income	**<20,000**	10 (9.4%)	59 (55.7%)	37 (34.9%)	0.001*
	20,000-50,000	15 (35.7%)	20 (47.6%)	7 (16.7%)	
	50,000-80,000	6 (50.0%)	5 (41.7%)	1 (8.3%)	
Residence	**Rural**	2 (9.5%)	5 (23.8%)	14 (66.7%)	0.001*
	Urban	29 (20.9%)	79 (56.8%)	31 (22.3%)	
Duration of diabetes	**<10 years**	11 (16.7%)	33 (50.0%)	22 (33.3%)	0.440
	>10 years	20 (21.3%)	51 (54.3%)	23 (24.5%)	

Discussion

The study was undertaken with the objective of assessing knowledge and practice of diabetic foot care for the prevention of complications especially

foot ulcers. The results showed that the majority of the patients had a poor knowledge and a poor practices reflecting a grim situation of healthcare among patients in this region of South Punjab. Only 25.6% of the participants had good knowledge. An even worse condition was seen regarding practice, with only 19.4% following good practices. Studies conducted in other areas of Pakistan also showed similar poor knowledge and practice.[13-15] Another study conducted in Islamabad revealed only 6% of respondents to be following good practices.[14] Poor scores were in studies done in other countries as well.[16,17,18]

Factors found responsible for significant impact on the results include educational status, monthly household income and the place of residence. Educational status had a massive impact on the results. The results clearly showed that improving the educational status among the masses can go a long way in improving the knowledge and practices of the diabetics. These results are in accordance with a study conducted in India.[19] Similarly, researches conducted in Pakistan.[13] Nigeria[11] and Iran[20] showed that illiterate people had poor knowledge and practices.

Another factor found responsible for the poor practice was low household monthly income. In the low-income group, only 10% of respondents practiced good foot care,while in the high-income group 39% of respondents followed the principles of good foot care. The difference can be ascribed to the fact that people with low incomes could not afford to visit and consult their doctors regularly or buy the recommended cotton socks and soft shoes. Also, many of them were laborers who could not take care of their feet owing to their occupational demands. This was also shown in a research conducted in Ethiopia[12] where 23 percent of the respondents reported that their profession was the main barrier in the way of proper foot care practices. This was also in accordance with a research done in Nigeria.[11]

Astonishingly 94.4% of participants washed their feet regularly. This was not because of their knowledge that it may prevent foot ulcers, rather as a religious obligation of Muslims. This also gave them a chance to inspect their feet. Similar finding was reported in studies done at Lahore[13] and Karachi[15] where 89% and 87.5% of respondents said that they washed their feet regularly. Environmental factors were also found to be playing a part in affecting practices, e.g., about two-thirds of patients did not wear socks regularly, and most of them reported the extremely hot temperature to be the cause of non-adherence to this healthy practice. Moreover, due to the same reason, the majority of the patients preferred wearing open footwear making their feet more prone to trauma which is one of the reported causes of foot ulcers.[21] This study revealed better knowledge among urban patients and those who have had diabetes for a longer duration of time. Place of residence and duration of diabetes was found significantly associated with practices in Ethiopia as well.[20] This might be because they had come in contact with healthcare professionals more often than relatively newer patients. This increased patient-doctor gap and poor communication had been reported as a barrier to proper foot care in different researches also.[18,20,22]

Conclusion

Poor knowledge and practice among patients ask for the need of improving education and economic condition of people of this region. Specialized diabetic nurse educator and podiatrist services should be made available at diabetic clinics to improve knowledge and practices among patients.

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