ORIGINAL ARTICLE

Foot Care Practices among Diabetic Patients Visiting Public Hospitals in Rawalpindi

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ABSTRACT

Objective: To assess the practices of diabetic patients visiting public hospitals of Rawalpindi with regards to diabetic foot complications and its prevention**.**

Study Design: Descriptive cross-sectional survey.

Place and Duration of Study: The study was conducted in public hospitals of Rawalpindi within a duration of one and a half year. (November 2018-March 2020)

Materials and Methods: A descriptive cross-sectional survey was conducted on diabetic patients in the diabetic clinic situated in public hospitals of Rawalpindi. By using convenient sampling technique 200 patients were interviewed. Sample size was calculated using WHO calculator, with error of 5%, confidence level of 95%. Walk in (unscheduled) diabetes mellitus patients were approached and asked for willingness to participate in study after being given a brief introduction about the study. Foot care practices were compared with the examination findings.

Results: The mean age of respondents was 50 ±12.44 years. Only 21.5% of patients were practicing good foot care 43%had satisfactory practices and 35.5% had poor practices. Education of the patients had significant statistical association with good foot care practices (*p*-value <0.0001). Gender also showed significant association with good foot care practices (*p*-value <0.013) while age and socioeconomic status had no significant statistical association with good foot care practices.

Conclusion: Foot care practices adopted by the patients are highly inadequate and proper guidelines need to be provided to patients in addition to the insurance of proper foot care practices if diabetic foot associated complication is to be prevented.

Key Words: *Diabetic Foot, Diabetes Mellitus, Foot Self Care, Practices, Shoes.*

Introduction

Diabetes mellitus is characterized by a collection of metabolic disorders which commonly includes hyperglycemia, the underlying cause of which is either impaired production or action of insulin or both.[1] The number of people afflicted with diabetes has been increasing over the past thirty-five years.[2]

World Health Organization defines diabetic foot as neuropathy and vasculopathy associated infection and destruction of the deep tissues of lower limbs.[3]

Diabetes is associated with numerous complications, however, in the last ten years, problems regarding diabetic foot have been consistently rising.[4]

Within the diabetic population, foot problems are known to be an important factor leading to general ill health and mortality.[5] The major underlying reason for why diabetic patients require hospital admissions is complications associated with diabetic foot syndrome.[6] It was found that at least two or more risk factors that could potentially lead to diabetic foot were present in 10% of patients at the time of initial presentation with diabetes mellitus.[7] Amputations performed due to diabetes associated complications makes up 60% of the total number. of lower limb amputations carried out in the United States.[8] Diabetic foot has serious financial implications for the patients and adversely affects their lifestyle.[9]

There have been studies that state prevalence of diabetes in Pakistan is 13.9%.[10] However, with proper guidance and adequate measures the amputation rate of diabetic foot associated complications can be decreased by 49-85%.[11] Proper daily foot inspection was only performed by 17% of diabetic patients.[12]

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Funding Source: NIL; Conflict of Interest: NIL
Received: April 20, 2020; Revised: March 01, 2021
Accepted: April 19, 2021

Considering all the variables that contribute in the development of diabetic foot it is apparent that the severity of this condition is dependent upon patient cooperation regarding foot care practices dictated by medical practitioners. Hence further research to assess the implementation of these practices may assist in gaining control over this complication. The rationale of this study was to assess the practices of diabetic patients visiting Puetic foot complications and its prevenblic hospitals of Rawalpindi with regards to diabtion.

Materials and Methods

A descriptive cross sectional survey was conducted on diabetic patients in the diabetic clinic situated in public hospitals of Rawalpindi. The study was conducted within a duration of one and a half year. (November 2018-March 2020). Based on WHO calculator, the estimated sample size was found to be 200, with error of 5%, confidence level of 95%. Previous study used for calculation.[13]Convenient systematic sampling technique was used. Formal permission was obtained from ethical review board of the college to conduct the study. The inclusion criteria consisted of patients with diabetes mellitus who had consented to the study, both males and females above 18 years of age. The exclusion criteria consisted of Patients who had undergone amputation, patients with gangrenous foot, foot ulcers, foot infections, and patients not willing to participate in the study. Walk in (unscheduled) diabetes mellitus patients visiting public a hospital of Rawalpindi were approached and asked for willingness to participate in study after being given a brief introduction about the study. The participants were interviewed by the researchers. The questionnaire was in the form of a pre-tested structured interview sheet with questions adopted from various studies conducted in Pakistan.[10, 12, 13] The questionnaire was translated into the Urdu language by a bilingual translator. The first part of the questionnaire consisted of questions regarding age, gender, education and duration of diabetes. The second part of the questionnaire included, questions to determine practice regarding foot care.

The dependent variable was foot care practices in diabetics and the independent variables included education, gender, and duration of diabetes.

Data was analyzed using SPSS version 25. Mean with standard deviation was calculated for quantitative data like age and practice scores with relation to education. Frequencies and percentages were estimated for qualitative variables like gender, age groups, education level, occupation and various foot care practices and examination findings. The chi+square test was used to associate the following non-parametric variables; results of foot care practices with educational background and gender. Seventeen questions were asked regarding foot care practices. Each correct answer was given one mark.

Poor practices: score is less than 50% (≤9)

Satisfactory practices: score is 50%-70% (>9<12)

Good practices: score is greater than 70% (≥12)

Results

A total of 200 respondents were selected. The mean age of respondents was 50 ±12.44 years. Out of 200 respondents190 (95%) of the total respondents were married. 130(65%) of the total 200 respondents had no previous knowledge about diabetes before contracting the disease. Demographic data in (Table I)

Table I: Demographic Profile of Patients Interviewed

Age (years)	Frequency (%)
18-40yrs	54(27.0%)
41-60yrs	105(52.5%)
>60yrs	41(20.5%)
Gender	
Females	104(52.0%)
Males	96(48.0%)
Education	
Illiterate	71(35.5%)
Under Matric	43(21.5%)
Matric	41(20.5%)
Intermediate	24(12.0%)
Postgraduate	21(10.5%)
Occupation	
Unemployed	106(53.0%)
Employed	75(37.5%)
Retired	19(9.5%)

From a total of 200 respondents 43 (21.5%) scored >70%(Good) ,86 (43%) scored between 5070%(Satisfactory) and 71 (35.5%) scored <50% (Poor).

Different types of footwear were preferred by the patients. Most of the patients,90 (45%) preferred

sandals whereas 44 (22%) of the patients preferred open toes, 38(19%) preferred boots and 24 (12%) preferred house slippers. Athletic shoes and orthofeet shoes were preferred by 2 patients (1%) each. Majority of patients, 169 (84.5%) stated they wear shoes most of the day.

With respect to exercise 110 (55%) of the patients were involved in some sort of physical activity like walking, jogging, bicycling etc. while 90(45 %) patients did not practice any routine exercise. When asked about blood sugar control, 59(29.5%) reported that they check their blood sugar levels daily and 130(65%) of patients checked their last blood sugar levels a month ago while 11(5.5%) of patients did not remember when they last checked their blood sugar levels.

Table II: Questions Asked to Determine Practice Regarding Foot Care

Structured Questionnaire n=200 Yes or No	Frequency(%)
Q1. Regular control of blood sugar levels?	189(94.5%)
Q2. Ownership of a personal glucometer?	135(67.5%)
Q3. Know How to properly use a glucometer?	128(64%)
Q4. Any Pain in your entire leg or part of your leg while walking?	175(88%)
Q5. Tingling or numbness in your leg or feet?	173(86.5%)
Q6. Podiatrists visit in past half yearduration.	85(42.5%)
Q7. Reach the sole of your feet without help?	179(89.5%)
Q8. Daily inspection of your feet for problems?	166(83%)
Q9. Immediately tell your doctor about any injury to your foot.	158(79%)
Q10. Wash your feet thoroughly every day?	192(96%)
Q11. Dry your feet between toes after washing?	155(77.5%)
Q12. Application of lotion on your feet daily?	121(60.5%)
Q13.Is there another person to cut your toenails in your house?	190(95%)
Q14. Wear shoes all the time?	169(84.5%)
Q15.Test water temperature before applying the water to your feet?	57(28.5%)
Q16.Inspection of the inside of your shoes before wearing them?	171(85.5%)
Q17.Wear diabetic shoots or shoes with protective inserts?	17(8.5%)

The gender has shown an effect on foot care practices (p=0.013), similarly the contribution of education was also significant with respect to foot care practices (p<0.0001). Age however has shown no association with foot care practices (p=0.35). The role of education is further strengthened by the fact that the mean score of the Illiterate population was 9±1.87 and mean score for the postgraduates was 12.2 ±1.82. (Table III) (Table IV).

Table III: Relationship of Practices Regarding Foot Care with Gender

Gender	Practice scoring about foot care		
Female	Good 15(14.4)	Satisfactory 44(42.3%)	Poor 45(43.3%)
Male	28(29.2%)	42(43.8%)	26(27.1%)
p-value= 0.013			

Table IV: Relationship of Practices Regarding Foot Care with Education

Education	Practice scoring categories		
Illiterate	Good 4(5.6%)	Satisfactory 24(33.8%)	Poor 43(60.6%)
Under Matric	8(18.8%)	21(48.8%)	14(32.6%)
Matric	12(29.3%)	20(48.8%)	9(22.0%)
Intermediate	4(16.7%)	17(70.8%)	3(12.6%)
Post Graduate	15(71.5%)	4(19.0%)	2(9.5%)
p value< 0.0001			

Discussion

The findings of this study indicated that a significant percentage of the diabetic population had poor foot care practices. Furthermore, gender and education had shown to be significant with respect to the quality of foot care practices. Only 21.5% of respondents in this study had good practices. This value is lower than that of a study conducted in Ethiopia (39%) and this dissimilarity may be attributed to differences in level of education of patients and amount of direct guidance provided by the healthcare professionals in the respective countries.[14] However a recent study conducted in India stated that only four out of every ten individuals had good practice of foot care.[15] A study in Iran also reported that only 8.8% of respondents had good scores of foot care practices.[16]

The individual frequencies showed that only 42.5%

of patients had been taught how to properly care for their feet but even so 96% of washed their feet daily. This difference can be due to the performance of Ablution as an Islamic perquisite for daily prayers and a study from Shifa hospital Islamabad confirmed the role of ablution with respect to the quality of foot care.[12]

According to our study education impacted the quality of foot care practices as majority of the patients with post graduate level education also had good practices. This is consistent with another study conducted in Jinnah hospital Lahore.[13] A possible reason for this can be that there is a greater chance of the patient's comprehension of any foot care guidance material if the patient has a greater education level.[17] Secondly, since most of the respondents in this study were categorized as illiterate, hence adopting educational interventions regarding better foot care practices in a visual or auditory manner may prove more effective.[18]

This study showed the percentage of males (29.2%) with good foot care practices were nearly double that of the females (14.4%). Another study in Saudi Arabia also reported poor KAP scores in diabetic females.[19] A contributing factor could be that females have less awareness and education about proper foot care practices.[17] However another study reported that females had 2.07 times better foot self-care than males.[14] These differences across multiple studies can be due to varying levels of literacy of the respondents or sociocultural differences.[16,18]

Age was not shown to be a significant factor as is supported by the following study conducted in a tertiary care hospital in Pakistan.[20]

This study also showed that most of the respondents wore sandals (45%) and only 8.5% wore special protective shoes. A study in India also confirmed that majority of patients wore chappals (open footwear).[21] This may be due to hot weather conditions throughout most of the year, so naturally many people may choose open footwear.[18] Another potential explanation for this may be that majority of the patients attending public hospitals were unemployed and thus less capable of affording appropriate therapeutic footwear. Effective and affordable footwear is recommended especially for high-risk patients with foot deformities and neuropathy.[22]

Limitations of our study are that the current study sample did not represent the entire population of Pakistan with several different ethnicities. In addition, relevant measures of blood glucose, urine glucose, cholesterol and blood pressure were not taken which could have further elaborated new findings.

It is recommended that further studies with a wider sampling frame and larger sampling size be conducted to accurately assess the factors responsible for inadequate foot care practices. Furthermore, the effectiveness of current educational interventions regarding foot care practices needs to be re-evaluated and tailored to the literacy levels of the population.

Conclusion

This study indicates that foot care practices currently adopted are inadequate. It is necessary to provide patients information about the disease (Diabetes Mellitus) itself and its complications one of which is diabetic foot. This goal could only be achieved with the combined efforts of our healthcare centers and patients.

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