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Research Article

INFLUENCING FACTORS AND PATIENTS BEHAVIOR REGARDING DIABETIC FOOT SYNDROME (DFS)

Dr Abdul Muqeet¹, Dr Asfiya Ather², Dr Fahad Fayyaz Bhatti³

¹ Nishtar Medical University Multan, ² Amna Inayat Medical College, Lahore, ³ Southern Medical University, China.

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Abstract:

Objective: The aim of our study was to analyze the behavior of diabetes patients regarding foot care and to find out the factors of influence.

Study Design: A cross sectional descriptive study.

Place and Duration: The study was held in Bahawal Victoria Hospital (BVH), Bahawalpur of one year starting from May, 2018 to April, 2019.

Methodology: Selected a total number of 400 patients of diabetes either hospitalized or visiting OPD of hospital. Took the approval from ethical committee of the hospital. Verbal consent was taken from all the patients during interview. We used Nottingham Assessment of Functional Footcare (NAFF) scale for the assessment of footcare behavior of the patients. The scoring of more than 50 was considered satisfactory for footcare behavior. This scoring was linked with numerous variables. We used SPSS 20 for analysis of data.

Results: We selected 400 patients of diabetes either hospitalized or visiting OPD of Bahawal-Victoria hospital Bahawalpur. Gender distribution of males and females was as 162 (40.5%) and 238 (59.5%) respectively. We calculated 52.71 ± 11.84 years as Mean \pm SD age of all selected patients. There were 228 (57%) patients who didn't get any knowledge or education about proper footcare. The patients who scored ≤ 50 according to NAFF scale were 289 (72.3%) in number. Significant factors related with better footcare behavior were prior foot-care knowledge given by the doctor, previous diabetes history of family, educational level, monthly income and locality of rural or urban area with the P value of less than 0.05 for each.

Conclusion: In this cross-sectional study we concluded that most of the patients were not having sufficient knowledge and practices about diabetic foot syndrome (DFS) because of which observed poor footcare behaviour and it was considerably linked with influencing factors like former footcare knowledge given by doctors, diabetic history in family, monthly income, educational level, urban and rural back ground.

Keywords: Diabetic Foot Syndrome (DFS), Diabetes, NAFF, Footcare behavior, inadequate behavior.

Corresponding author:

Dr. Abdul Muqeet

Nishtar Medical University Multan.

QR code



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INTRODUCTION:

One of the major health issues of current century is diabetes. Globally there are approximately .425 billion people or we may say 8.80% of 18 years to 80 years aged people are affected by diabetes according to the IDF (International Diabetes Federation) Diabetes Atlas 2018 and population living in low- and middle-income countries (LMICs) is about 79% of the globe. There will be approximately .629 billion patients of diabetes mellitus, aging from 18 years to 80 years by 2045 if such tendencies continued in practice [1]. In Pakistan prevalence of DM (diabetes mellitus) was approximately 9.80% in 2016 according to WHO (world health organization) which was expected to rise rapidly in upcoming years [2].

There are many complications attached with DM and their intensity increases with the increase in the severity of diabetes. Diabetic foot is among deadliest complications of diabetes that with passage of time results in amputations, so as not only put burden on health care system financially but also results in the death of the patients. This is also one of those complications of diabetes due to which patients must be hospitalized for long durations as it is a long-term complication. Approximately 15% of all diabetic patients are affected by diabetic foot ulcers [3]. There is a high risk of developing foot ulcer up to 25% of prevalence rate in all diabetic patients in addition with 50% of lower limb amputations [4]. There was observed a prevalence of 13.9% regarding diabetic foot syndrome in a study conducted in 25 centres of Pakistan [5].

Prevention from diabetic foot syndrome and its amputations can be achieved by maintaining a good glycemic control, proper awareness of said disease and practicing daily routine of footcare. We aimed in our study to find out clinical, social and demographic factors which effect foot-care behaviour hence a plan for foot-care edification can be established and to assess foot- care behaviour in diabetic patients.

METHODOLOGY:

We included a total of 400 patients in our study who were affected of diabetes and diagnosed by using American Diabetes Association (ADA) criteria. We obtained approval from the ethical committee of the hospital. All selected patients were well informed about the study procedures and took verbal consent from all patients. With a population prevalence of 9.8% and with 95 % confidence level and 5% margin of error used Rao-soft online sample size calculator to select the sample size of the study. Selected the patients from those who were either visiting OPD of

hospital, newly diagnosed or old cases, and from patients already admitted in the hospital ward. All those patients were not selected who were having hearing / cognitive impairment and those who were not willing to fill up questionnaire.

Noted all the concern information like history of foot-care education by the physician, previous history of diabetic foot ulcer, control of diabetes and its complications, socio-economic status, educational level, duration of diabetes, gender and age of the selected patients. Through the previous medical records of the patients carried out the assessment of diabetes concerned macro-vascular complications like myocardial infarctions, cerebrovascular accidents and peripheral vascular disease. Insofar as micro-vascular complications were involved, retinopathy was evaluated by comprehensive fundoscopic retinal checkup, nephropathy by the existence of frank proteinuria or micro-albuminuria and neuropathy was evaluated by microfilament analysis. Also collected the data of different laboratory tests like fasting lipid profile, alanine transaminase (ALT), creatinine and urea, complete blood count (CBC), fasting blood sugar (FBS) measurement, random blood sugar (RBS) measurement and glycated hemoglobin (HbA1C).

With the help of authenticated Nottingham Assessment of Functional Footcare (NAFF) designed a questionnaire for the assessment of footcare behaviour. every question designed in it was having a score of 0-3. The overall score was calculated from the summation of all responses of patients. Satisfactory footcare behaviour was considered on a score of >50 and poor footcare behaviour was considered when the score was <50. All collected data was calculated and analyzed with the help of SPSS 20 and displayed in standard deviations and mean values. Linked the NAFF scores with several variables comprising footcare edification given by the physicians using chi square test, monthly income, patient literacy rate, history of diabetic foot, HbA1C and duration of diabetes using independent sample T test, rural and urban background. P value was considered significant with less than 0.05.

RESULTS:

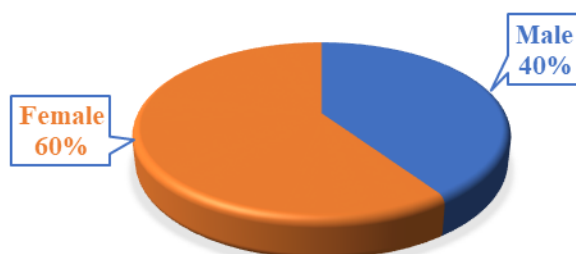
400 patients of diabetes either new or old visiting OPD of hospital or admitted in ward were selected for our study. Gender distribution of male and female was as 162(40.5%) and 238(59.5%) respectively. Average age of all selected patients was 52.71 ± 11.84 years. There were 194(48.3%) patients having monthly income of <20,000, from urban areas there were 267(66%), illiterate patients were 152(38%) and

patients who had done intermediate or above were 80(20%). More brief data is shown below in table number 01.

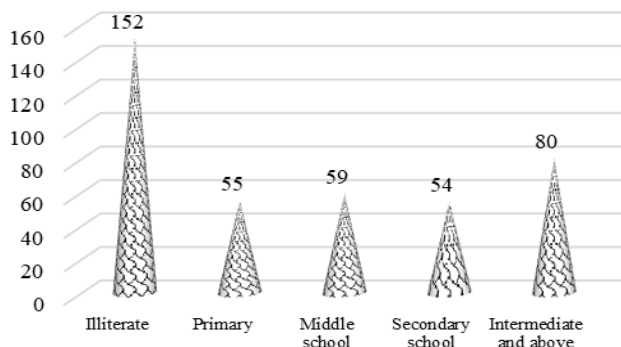
Table No 01: Demographic characteristics of the patients

Characteristics	%age	N=
Gender		
Male	40.5%	162
Female	59.5%	238
Urban or Rural background		
Urban	66.8%	267
Rural	33.2%	133
Patient education		
Illiterate	38%	152
Primary	13.80%	55
Middle school	14.80%	59
Secondary school	13.50%	54
Intermediate and above	20%	80
Marital status		
Married	93.20%	373
Single	6.80%	27
Income		
<Rs 20,000	48.30%	193
Rs 20-40,000	30.50%	122
>Rs 40,000	21.30%	85

GENDER DISTRIBUTION



EDUCATIONAL STATUS



The average HbA1C was 8.37 ± 2.04 percent and average diabetes duration was 7.9 ± 6.8 years. Diabetes history in the family background was found in 235(58.8%) patients and diabetic foot was reported in 75(18.8%) cases. Calculation of complications data analysis was as cerebrovascular was in 31(7.8%), cardiovascular was in 84(21%), nephropathy was in 73(18.3%), neuropathy was in 236(59%) and

retinopathy was in 206(51.5%) patients. 172(43%) patients accepted to have preceding knowledge of footcare. 47.11 ± 7.69 was the mean NAFF score of all patients. ≤ 50 NAFF score was observed in 289(72.3%) cases and on the other hand more than 50 score was observed in 111(27.7%) patients. Response result of patients to numerous NAFF questions was noted and results are shown below in table number 02.

Table No 02: Distribution of responses to individual items of the Nottingham Assessment of Functional Foot-care (NAFF)

S. No	Item	Question Score			
		0	1	2	3
1	Do you examine your feet?	68	177	1	154
2	Do you check your shoes before you put them on?	54	52	111	183
3	Do you check your shoes when you take them off?	108	91	103	98
4	Do you wash your feet?	8	28	81	283
5	Do you check your feet are dry after washing?	68	85	110	137
6	Do you dry between your toes?	125	106	87	82
7	Do you use moisturizing cream on your feet?	171	51	76	102
8	Do you put moisturizing cream between your toes?	82	71	50	197
9	Are your toenails cut?	7	45	191	157
10	Do you wear sandals?	68	126	84	122
11	Do you wear slippers?	14	34	96	256
12	Do you wear trainers?	216	90	71	23
13	Do you wear lace-up shoes?	223	67	76	34
14	Do you wear pointed-toe shoes?	25	50	77	247
15	Do you wear flip-flops?	65	92	74	169
16	Do you break in new shoes gradually?	113	167	88	32
17	Do you wear artificial fiber (e.g. nylon socks)?	38	127	99	136
18	Do you wear seamless socks/stockings/tights?	204	78	85	33
19	Do you wear shoes without socks?	142	129	82	47
20	Do you change your socks/stockings/tights?	128	114	129	29
21	Do you walk around the house in bare feet?	40	99	97	144
22	Do you walk outside in bare feet?	11	40	50	299
23	Do you use a hot water bottle in bed?	11	44	60	285
24	Do you put your feet near the fire?	12	76	101	211
25	Do you put your feet on a radiator?	19	46	70	264
26	Do you use a bath thermometer?	134	60	140	66
27	Do you use corn remedies/corn plasters/paints when you get one?	66	140	60	134
28	Do you put a dry dressing on a blister when you get one?	129	75	139	57
29	Do you put a dry dressing on a graze, cut or burn when you get one?	103	78	145	74

Different factors which considerably affected the NAFF scores were formal footcare knowledge given by physicians with P value more than 0.0001, history of diabetes in family background with P value equal to 0.005, monthly income with P value more than 0.0001, educational level with P value more than 0.0001 and

urban or rural background with P value more than 0.001. Footcare score of the patients was not effected by having history of diabetic foot with P value equal to 0.283. found no relationship among diabetes duration, NAFF score and HbA1c levels. Findings are presented below in table number 03.

Table No 03: The association of various patient factors with NAFF scores

Patient characteristic	NAFF Scores		P value
	<50 (N=)	>50 (N=)	
Urban or rural			
Urban	180	87	0.001
Rural	109	24	
Patient education			
Illiterate	129	23	<0.0001
Primary school	45	10	
Middle school	41	18	
Secondary school	32	22	
Intermediate and above	42	38	
Monthly income			
<Rs 20,000	158	45	<0.0001
Rs.20-40,000	80	42	
>Rs 40,000	51	34	
Family history of diabetes			
Yes	105	67	0.005
No	184	44	
History of diabetic foot			
Yes	51	23	0.283
No	283	88	
Foot-care education by healthcare provider			
Yes	105	67	<0.0001
No	184	44	
NAFF: Nottingham Assessment of Functional Foot-care			

DISCUSSION:

According to a study 84% of non-traumatic amputations in diabetics are just because of diabetic foot syndrome (DFS) [6]. One lower limb amputation occurs in every 30 second in all over the world due to diabetic foot syndrome (DFS) [7]. As compared to non-diabetic patients, death rate is much higher in diabetic patients ranging from 68% to 90% after amputation [8]. Moreover, foot ulcer is again developed within five years in two third patients of diabetic foot syndrome [9]. Several studies conducted in Pakistan indicate fluctuating foot-care practices between diabetic patients, even though no one of these exercised a validated tool like NAFF which is used in our study. With a self-developed questionnaire, a study was conducted in Jinnah Post graduate Medical College (JPMC), Karachi through which it was found the mean practice score of 5.6 with the range being 1-10 [10]. Approximately 6% patients were found to be practicing proper footcare, according to a study conducted in Islamabad [11]. According to a study conducted in Lahore it was observed that 14% of the participants were having good footcare practices [12]. Various studies conducted in Pakistan showed poor

knowledge about footcare practices, healthier daily foot examination, walk barefoot (a practice which can prove harmful for the diabetics) and good state of frequent washing of the feet [10-13].

In our study we found 172(43%) patients having footcare education which was higher than the other analysis conducted in Pakistan ranging from 16% to 38% [11-14]. Poor footcare behaviour was observed in our study even though, patients were having good footcare knowledge. This might be due to poor knowledge of the doctors or less time that was given to the patients by the doctor during checkup because of overloading of patients. 5 minutes of consultation time by the doctor to the patient was observed during a study conducted in Khyber Teaching Hospital, Peshawar [15]. In another research conducted in Sindh, Pakistan, good knowledge about diabetes was observed only in 55% doctors [16].

Poor footcare practice was observed in our study. Same alike results were found in a study conducted in India showing poor practices towards diabetic footcare syndrome [17]. Significant relation was observed

among various factors and NAFF scores in our study and similar results were also depicted in various studies conducted earlier [10,12,17]. Poor footcare behaviour was also observed in many studies conducted in India [18,19]. An inverse relationship was depicted among practices, diabetic foot ulcer and knowledge about footcare [19-21] and many studies from Iran and Nigeria also presented poor state of practices and knowledge about footcare [22,23]. A study conducted about educational program of footcare behaviour was discontinued early due to higher prevalence of foot ulcer in control group than the interventional group [24]. Same results were also observed in another study showing significantly lesser occurrence of new ulcer (31% vs 18%) in the intervention group equated to control group [25].

The doctors must regularly examine feet of diabetic patients. It was observed during our study that those patients who were examined by the doctor and advised for the footcare about diabetic foot syndrome showed significantly higher selfcare about the disease. Same results were also depicted by various other studies where improvement in knowledge resulted in better footcare behaviour and practices [26-30]. Therefore, for better and improved footcare practices it is very necessary to improve the knowledge of patients about diabetic foot syndrome and doctors must provide better patient-friendly educational intercession together with frequent checkups.

CONCLUSION:

In our study we found that most of the patients were not having sufficient knowledge and practices about diabetic foot syndrome (DFS) because of which observed poor footcare behaviour and it was considerably linked with influencing factors like former footcare knowledge given by doctors, diabetic history in family, monthly income, educational level, urban and rural back ground.

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