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Assessment of Knowledge and Practice of Diabetes Mellitus Patients Regarding Foot Care in Tertiary Care Hospitals in Quetta, Pakistan

Noman Ul Haq[1], Palwasha Durrani[2], Aqeel Nasim[3]*, Sohail Riaz[3]

[1]Assistant Professor, Faculty of Pharmacy & Health Sciences, University of Balochistan, Quetta, Pakistan
[2]Pharm-D, Faculty of Pharmacy & Health Sciences, University of Balochistan, Quetta, Pakistan
[3]M.Phil. Pharmacy Practice, Department of Pharmacy Practice, Faculty of Pharmacy & Health Sciences, University of Balochistan, Quetta, Pakistan
**Corresponding Author Email: aqeel_nasim @ yahoo.com*

Abstract: Objective: The present research aimed to evaluate practice and knowledge about foot care in patients of diabetes mellitus among two different Government hospitals and general community of Quetta city, Pakistan. **Methodology:** Questionnaire based cross sectional study conducted among general population and 2 different government hospitals diabetic patients and about 380 questionnaires were distributed among patients. Data gathered from April 2015 to September 2015. Pretested questionnaire was used to evaluate practice and knowledge of diabetic patients about foot care. Practice and knowledge scores were classified as poor and adequate, less than 50% for poor and greater than 50% for adequate. Descriptive and inferential statistics have been done by using SPSS version 20. **Result**: Of 380 questionnaires, 364 were returned. Majority 112 (30.8%) of respondents were from 46-55 years. Male gender dominated with 204 (56.0%). Marital status result showed that there were 323 (88.7%) married. Majority of respondents were from urban locality 269(73.9%). Majority of respondents 80 (22.0%) were educated. Majority of respondents 168 (46.2%) were having no job. 58.8% respondents had adequate knowledge and 62.4% had poor practice of DM foot care. There is statically significance difference among occupation ($p<0.001$), locality ($p<0.001$), income ($p<0.001$) and Level of education ($p<0.001$) which shows static significance difference in knowledge and practice score. **Conclusion:** The result of the study shows poor practice and adequate knowledge in Diabetic patients about foot care; to enhance overall practice, it is necessary to make knowledge better and to reduce diabetes foot complications.

Keywords: knowledge, Diabetes, foot ulcers, practices, Pakistan

INTRODUCTION

Diabetes mellitus (DM) is a metabolic disorder that is characterized by chronic hyperglycemia; it is a common and potentially disabling chronic disease (Desalu O. et al., 2011). The condition is currently bothering 194 million people wide-reaching and is estimated to promptly increase to 333 million people in 2025 as a longer life expectancy, sedentary lifestyle and changing dietary pattern (Wild S. et al., 2004).

According to International Diabetes Federation, (IDF) in Pakistan about 6.2 million people with age between 20 to 79 years had diabetes in year 2003 and till 2025 diabetes will probably be increased to 11.5 million. Around 6 million persons additional to DM at present are suffering from glucose tolerance impairment and all this above data makes Pakistan 7th largest in world having diabetes in ages between 20 to 79 years and if estimation gets accurate, so it will make Pakistan 5th largest by 2025 and deaths only from diabetes expected to increase by fifty one percent (51%) in coming 10 years (Hasnain S. et al., 2009).

The DM increase prevalence is likely to bring and associated with increase in DM complications in diabetic patients. Among many complications of DM, the ones having most important type of complications are those of foot problems as these complications make increase in public health problems and are one of the leading causes of mortality, amputation and admission of diabetic patients (Desalu O. et al., 2011).

Foot ulcers are one of most common diabetes complications having 4 to 10% prevalence. Treating foot ulcers, can be expensive and it is evident that about 49 to 85% of all diabetes related foot problems can be prevented by taking necessary conscious and proper measures. This can be achieved by proper education to both professionals and diabetic patients (Hasnain S. et al., 2009).

Angiopathy, mechanical stress and neuropathy are major factors in foot ulcers development in diabetic patients. Neuropathy mostly leads foot ulcers; so it is advisable that on annual basis all diabetic patients be screened for foot ulcers (Rahman S. et al., 2008). Foot ulcers due to diabetes have been evident to occur after 13 years mean interval from diabetes diagnosis (Desalu O. et al., 2011).

Among all diabetes complications, the foot complications are considered to be most preventable. Important risk factors for developing foot problems due to diabetes were due to poor practices of foot and due to poor knowledge (Chandalia H. et al., 2008).

Good knowledge and practice regarding diabetic foot care will reduce the risk of diabetic foot complications and ultimately amputation. This study is conducted to assess patients' knowledge and compliance of diabetic foot care. In Quetta city, there is no research done on this topic so the present research aimed to evaluate practice and knowledge about foot care in patients of diabetes mellitus in Quetta.

METHODOLOGY

Objectives

Good knowledge and practice regarding diabetic foot care will reduce the risk of diabetic foot complications and ultimately amputation. This study is conducted to assess patients' knowledge and compliance of diabetic foot care.

Study design

The cross-sectional, descriptive questionnaire based study was designed to evaluate knowledge and practice of diabetes mellitus regarding foot care.

Study setting

This study was conducted among patients attending two tertiary hospitals in Quetta city

- Bolan Medical College Complex Hospital Quetta
- Sandeman Hospital Quetta

Study duration

The study was conducted from April 2015 to September 2015.

Study sample

Total three sixty-four samples were collected.

SELECTION CRITERIA

Inclusion criteria

The OPD and Admitted patients who were interested were included in the study.

Exclusion criteria

Emergency ward patients and patients who were not willing, were excluded from the study.

Study Questionnaire

The questionnaire consists of three sections:

i) Demographic section

ii) Knowledge related questions regarding foot care

ii) Practice related questions regarding practice of foot care

Questionnaire contained 8 questions regarding knowledge of foot care and 12 questions regarding practice of foot care, which was approved and validated by the research committee of faculty of Pharmacy.

Procedure

Questionnaires were made and distributed among the diabetes mellitus patients in Government hospitals of the Quetta city and general community to get the information about the knowledge of disease in patients. The patients were asked to answer each question with "yes" "no" or I don't "know".

Statistical analysis

As statistical tool, SPSS (Statistical package for the social sciences) v. 22 is used to analyze the filled questionnaires.

Descriptive analysis is used for demographics and inferential statistics for evaluating practice and knowledge of diabetic patients.

RESULTS

Demographics Characteristics

Demographical data is shown in table 1 that contains various components of demography. The age group ranges from 16 to 85 years, majority 112(30.8%) of respondents being in the range of 46-55 years followed by respondents 99(27.2%) having age ranges from 36-45years. Gender result showed that male gender dominates with 204(56.0%). Marital status result showed there were 323(88.7%) married and 41 (11.3%) single ones. Majority of respondents were from urban locality 269(73.9%). Education level result showed that majority of respondents 80(22.0%) were educated and 56(15.4%) were primary and 49(13.5%) were illiterate. The occupation result showed that majority 168(46.2%) were having no job followed by 104 (28.6%) patients were having Government job, 51(14.0%) were having private job and 41(11.3%) were self-employers. The monthly income result showed that majority of respondents 168(46.2%) have monthly income more than 5,000 Rupee followed by 129(35.4%) respondents who have monthly income more than 15,000 Rupee.

TABLE 1: Demographic characteristics

DESCRIPTIVE	FREQUENCY	PERCENTAGE
Age		
16-25	21	5.8%
26-35	57	15.7%
36-45	99	27.2%
46-55	112	30.8%
56-65	44	12.1%

66-75	18	4.9%
76-85	31	3.6%
Gender		
Male	204	56.0%
Female	160	44.0%
Marital status		
Single	41	11.3%
Married	323	88.7%
Level of education		
Illiterate	49	13.5%
Primary	56	15.4%
Middle	30	8.2%
Metric	33	9.1%
F.A/F.S.C	36	9.9%
B.A/B.S.C	52	14.3%
M.A/M.S.C	80	22.0%
Professional studies	28	7.7
Occupations		
Jobless	168	46.2%
Government servant	104	28.6%
Private servant	51	14.0%
Self-employer	41	11.3%
Income		
No income	168	46.2%
<5000	20	5.5%
5000-10000	33	9.1%
10001-15000	14	3.8%
>15000	129	35.4%
Locality		
Rural	95	26.1%
Urban	269	73.9

Assessment of knowledge of the Diabetes mellitus

Table 2 describes the responses of the patients towards Diabetes mellitus knowledge. Knowledge was assessed by questions focusing on Diabetes mellitus, sign and symptoms, treatment and management. 83.2% patients know the importance of taking medication and 75.5% patients know the complication of disease. 72.85% have knowledge that foot ulcer is a common complication in diabetes mellitus. 39.9% patients said that they do not know smoking causes poor circulation affecting feet.

Table.2: Assessment of knowledge of the Diabetes mellitus

S.NO	QUESTIONS	YES	NO	DON'T KNOW
1	DM patients should take their medication because they liable to get DM complications?	303(83.2%)	18(4.9%)	43(11.8%)
2	Do you know foot ulcer is a common complication in DM?	265(72.8%)	24(6.6%)	75(20.6%)
3	Do you have any idea that dry and scaly skin is common symptom of foot ulcer?	167(45.9%)	52(14.3%)	145(39.8%)
4	Do you know wounds may not heal quickly in DM patients?	275(75.5%)	19(5.2%)	70(19.2%)
5	Do you know infections may not recover quickly in DM?	236(64.8%)	27(7.4%)	101(27.7%)
6	Do you know smoking causes poor circulation affecting the feet	180(49.5%)	41(11.3%)	143(39.3%)
7	Do you think you should inspect the inside of footwear for objects or torn lining?	235(64.6%)	107(29.4%)	22(6.0%)

Assessment of practice of the Diabetes mellitus

Table 3 describes the responses of the patients towards Diabetes mellitus practice. Each response was scored as 'yes' or 'no'. Practice scores for individuals were calculated and summed up to give the total practice score out of 364 patients.

Table.3: Assessment of practice regarding foot care

S.NO	QUESTIONS	YES	NO
1	Do you Inspect your feet daily?	201(55.2%)	163(44.7%)
2	Do you wash your feet two times in a day?	289(79.4%)	75(20.6%)
3	Do you wash your feet with warm water?	109(29.9%)	255(70%)
4	Do you trim toe nails straight across?	310(85.2%)	54(14.8%)
5	Do you measure your feet size when last you bought footwear?	163(44.8%)	201(55.2%)
6	Do you use talcum powder for keeping interdigital space dry?	113(31.0%)	251(69%)
7	Did you ever inspect inside of footwear?	162(44.5%)	202(55.4%)
8	Do you regularly walk barefoot?	58(15.9%)	306(84%)
9	Do you clean nails with sharp instrument?	289(79.4%)	75(20.0%)
10	Do you add antiseptic to water before feet cleaning?	170(46.7%)	194(53.3%)
11	Do you wear elasticated hosiery (to prevent edema and thrombosis)?	62(17.0%)	302(82.3%)
12	Do you feel heal ache?	240(65.9%)	124(34.1%)

Knowledge score group

The Cut off level was ≤ 4 and total knowledge questions were 7 and the scoring (knowledge) less than or equal to 4 was considered as poor knowledge and scoring (knowledge) greater than 4 was considered as adequate knowledge.

S.NO	KNOWLEDGE	FREQUENCY	PERCENTAGE
1	Poor Practice	227	62.4 %
2	Adequate Knowledge	137	37.6%

The knowledge score was analyzed and result shown in table 4.4, describes that 212 (58.2 %) patients have adequate knowledge while 152 (41.8%) patients have poor knowledge regarding diabetes mellitus.

Table.4: Knowledge score group

S.NO	KNOWLEDGE	FREQUENCY	PERCENTAGE
1	Poor Knowledge	152	41.8 %
2	Adequate Knowledge	212	58.8%

Practice score group

The Cut off level was ≤ 6 and total practice questions were 12 and the scoring (practice) less than or equal to 6 is considered as poor practice and scoring (practice) greater than 6 is considered as adequate practice.

The practice score was analyzed and result shown in table 5. It describes that 227 (62.4 %) patients have poor practice, while 152 (41.8 %) patients have poor knowledge regarding diabetes mellitus.

Table 5: Practice score group

Mean comparison of knowledge and Practice score

Knowledge and practice mean score was shown in table 6. Except age and marital status, all demographics are significantly associated (P<0.05).

Table 6. Mean comparison of knowledge and Practice score

Descriptive	N	Knowledge Score (mean ± SD)	P value	Practice Score (mean ± SD)	P Value
Age^^					
16-25	21	4.29 (1.901)		5.76 (2.300)	
26-35	57	4.84 (2.194)		5.49 (2.487)	
36-45	99	4.42 (2.167)		5.87 (2.311)	
46-55	112	4.89 (2.051)	0.206	6.42 (2.320)	0.218
56-65	44	4.00 (2.459)		5.98 (3.538)	
66-75	18	4.50 (2.176)		5.72 (1.904)	
76-85	31	4.00 (2.236)		5.08 (2.019)	
Gender^					
Male	204	4.78 (2.146)	0.019	6.25 (2.340)	**0.008***

Female	160	4.29 (2.173)		5.57 (2.322)	
Marital status^					
Single	41	4.59 (2.171)	0.361	6.00 (2.317)	0.483
Married	323	4.32 (2.161)		5.56 (2.618)	
Level of education^^					
Illiterate	49	3.24 (2.287)		5.1(1.747)	
Primary	56	2.93 (2.271)		4.6 (61.881)	
Middle	30	3.87 (1.995)		4.9 (1.447)	
Metric	33	3.76 (1.969)		4.67 (1.848)	
F.A/F.S.C	36	4.86 (1.588)	**0.001***	5.33 (1.852)	**0.001***
B.A/B.S.C	52	5.35 (1.545)		6.81 (2.482)	
M.A/M.S.C	80	5.94 (1.372)		7.35 (2.222)	
Others	28	6.07 (1.412)		7.86 (2.3370	
Occupations^					
No Job	168	5.04 (1.878)		3.8 (2.234)	
Govt. Servant	104	7.67 (2.346)	**0.001***	6 (1.239)	**0.001***
Private servant	51	5.47 (2.043)		4.47 (1.815)	
Self-employer	41	5.9 (2.154)		4.17 (2.407)	
Income^^					
No income	168	3.79 (2.232)		5.03 (1.865)	
<5000	20	4.65 (1.04)		5.8 (1.642)	
5000-10000	33	3.79 (2.205)	**0.001***	5.21 (2.382)	**0.001***
10000-15000	14	4.93 (1.817)		5.14 (1.61)	
>15000	129	5.71 (1.687)		7.45 (2.3420	
Locality^					
Rural	95	2.43 (2.147)	**0.001***	4.46 (1.737)	**0.001***
Urban	269	5.32 (1.605)		6.48 (2.319)	

^ Mann whitney test

^^Kruskal Wallis test *Significant difference

DISCUSSION

The study concluded that respondents were having adequate knowledge however poor practice is noted. This study is conducted to evaluate practice and knowledge of patients with diabetes regarding foot care. Respondents had good knowledge about foot care in diabetes. This is contrary to study conducted in Lahore where they showed lower score of knowledge (Hasnain S. et al., 2009).

This study revealed that patients had adequate knowledge of diabetic foot care because of most patients were aware about the complications associated with not taking proper medication, most of the patients knew that diabetes is major cause of foot ulcer they also knew that wounds and infection may not recover as fast as in non-diabetic people, most of patients inspect their footwear before buying.

The response associated with complications of diabetes concerned with poor foot circulation the patients were not aware that smoking causes poor foot circulation and also majority of patients did not know dry and scaly skin, and redness or bleeding between toes are the waning signs. These findings are consistent with study

conducted in Nigeria, where they showed that lack of awareness regarding smoking effect in causing poor foot circulation arises these deficiencies (Desalu O. et al., 2011).

Majority of people had adequate knowledge about diabetes and foot care because they were educated, only small proposition of people who were uneducated and from rural areas knew almost nothing and this is the reason that is associated with good knowledge score.

Association between knowledge and education is due to the fact that educated people or patients had ability to understand and read few provided supportive educational materials and they were also able to use the information technology (IT) for obtaining more relative information regarding disease. However, this is in contrary to the findings where respondents had lower knowledge score regarding education level (Desalu O. et al., 2011).

This study revealed that majority of respondents were having poor practice regarding foot care which directs alarming situation and also patients should take proper action. Costly measures may not be required as simple measures of preventing can prevent the patient from disability (Hasnain S. et al., 2009). The results of this study showed that the patients had lower percentage of positive response toward the questions concerning the practice about Diabetes mellitus regarding foot care and mean score of practice was indicating lower practice in patients. Reports from several countries indicate poor foot care practice (Pollock R. et al., 2004; Viswanathan V. et al., 1999).

In this study, inadequacies of foot care practice includes not checking/inspecting of feet and majority not used talcum powder for keeping inter-digital space dry and half of the responders did not add antiseptic in water before feet washing, previous studies also give agreement to poor level of practice of foot care of this study (Pollock R. et al., 2004; Viswanathan V. et al., 1999).

The data indicates that Diabetic patients had poor practice and not as much good knowledge regarding foot care. This is basically due to not having proper communication between patients and doctors.

Thus, patients' education regarding foot ulcer prevention should be done in routine care with diabetes mellitus patients both in community and hospitals (Fletcher J, 2006).

RECOMINDATION

The conclusion has been drawn which reflects adequate knowledge but poor practice, though adequate knowledge was not up to mark, that is why they are having poor practices, so it is recommended that betterment of knowledge is necessary to enhance overall practices to reduce diabetes complications associated with foot ulcer.

LIMITION

- The study is only conducted in two government hospitals of Quetta city and the private hospitals are excluded.
- The limitation included financial problems.
- Limited time

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