

# Diabetics and their Diseases, What do they know? Assessing Knowledge Level among Diabetic Patients

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## ABSTRACT

**Background:** Limb loss is one of the most devastating complications of Diabetes mellitus. Prevention is possible only with a well educated patient. We set out to assess patient education by physicians and foot care awareness in patients attending our DHQ Hospital.

**Study Design:** Descriptive study

**Place and Duration of Study:** This study was carried out at the DHQ Hospital, Mirpur, Azad Kashmir from 01.12.2012 to 30.03.2013.

**Materials and Methods:** This was a descriptive study involving 311 patients attending DHQ Hospital, Mirpur, Azad Kashmir. The patients were chosen by convenience sampling. The patients could be either type 1 or type 2 diabetics. A total of 18 multiple-choice questions were used. Patients less than 40 years were excluded from the study.

**Results:** 314 patients were enrolled in the study. 37.62% of patients were aged 40 to 50 years. Females comprised 52.41 % of the patients. 49.52% of patients were illiterate. About a third of patients (31.51%) visited their doctor weekly or fortnightly. A size-able number of patients (39.55%) had never or rarely been guided about life style changes by their doctors. 68.17% of patients had never or rarely been guided about diabetic complications. Only 23.15 % patients were aware about foot care. Pearson Chi-Square values were highly significant  $P < 0.0001$  for education and foot care awareness.

**Conclusion:** Patient education by physicians is almost non-existent in Pakistan and needs to be improved. Improving literacy will improve patient foot care awareness.

**Key Words:** Diabetes mellitus, Diabetic education, Diabetic foot care awareness

## INTRODUCTION

Loss of a limb is one of the most devastating complications of Diabetes mellitus. Lower extremity amputations are a very common outcome of diabetic foot complications<sup>1,2</sup>. About 10-15% of diabetic patients develop foot ulcers at some stage in their lives<sup>3</sup>. Diabetic foot problems are responsible for nearly 50% of all diabetes related hospital admission. The risk of foot complications increases with poor management of the disease. Older male patients, members of certain racial groups, long standing diabetes and poor preventive foot care are also risk factors for amputation<sup>4</sup>. At present there are 374 million people with diabetes worldwide<sup>5</sup>. Pakistan has the 7<sup>th</sup> largest diabetic population in the world with 12.9% prevalence according to WHO estimates for 2008. The number of diabetics in Pakistan is projected to reach 11.5 million by 2025. With the number of diabetics ever on the increase it has become imperative to prevent long term complications of the disease in order to lower the burden on health care facilities. Diabetes education is accepted as an important part of care for diabetics. This is associated with improved disease knowledge, changed attitudes and enhanced skills needed to improve disease control<sup>6-8</sup>. Education levels of patients

are an important determinant in chronic disease management. Literate patients are more likely to comply with patient education literature. They are also more likely to have enhanced disease knowledge.

Foot care education by attending physicians is the primary means of imparting foot awareness in diabetics. Failure to do so leads to an increased risk for foot ulceration leading to lower extremity amputation. Proper foot care education and periodic self-foot examinations are an effective method of preventing foot ulceration<sup>9</sup>. Access to affordable health care is an important determinant of outcomes in chronic diseases. The effects of foot ulceration are compounded by poor living conditions and poverty in developing countries<sup>10</sup>. This study looked at patient education by physicians about life style changes and disease complications. We also looked for foot care awareness in patients attending our DHQ Hospital.

## MATERIALS AND METHODS

This was a descriptive study involving patients visiting District Headquarters Hospital, Mirpur, Azad Kashmir. Convenience sampling was applied and the number of patients chosen was adequate to provide a confidence level of 95% and a confidence interval of 5 to 7%. An 18 part questionnaire was designed. The questionnaire

was administered by a doctor, who explained each question to the patient. Inclusion criteria were Type I and type II diabetics of any sex with diabetes of more than 1 year duration. Patients less than 40 years were excluded from the study. Data was analyzed by using SPSS version 11. Simple frequency distribution tables were generated for dependent and independent variables. A chi-square test ( $\chi^2$ ) was applied to find out the association of different variables.

## RESULTS

314 patients were enrolled in the study. 3 patients had incomplete data and were rejected. Analysis of the remaining 311 cases was performed using SPSS 11.

**Table No.1: Distribution of socio-demographic characteristics among persons with diabetes attending DHQ Hospital Mirpur, AJK, Pakistan (n = 311)**

Characteristics	Number	Percentage
<b>Sex</b>		
Male	148	47.59
Female	163	52.41
<b>Age</b>		
40-50 years	117	37.62
51-60 years	138	44.37
Above 60 years	56	18.01
<b>Education</b>		
Illiterate	154	49.52
Up to primary	77	24.76
Secondary to intermediate	33	10.61
Graduate and above	47	15.11
<b>Income</b>		
Less than Rs:11000 per month	130	41.80
Rs: 11000 to Rs: 23000 per month	98	31.51
More than Rs:23000 per month	83	26.69
<b>Family Size</b>		
Up to 4 members	122	39.23
More than 4 members	189	60.77
<b>Employment Status</b>		
Employed	73	23.15
Not employed	109	35.05
Support from other sources	130	41.80

37.62% of patients were aged 40 to 50 years. 44.35% were in the 50 to 60 years group while patients over the age of 60 years were 18.0% of the total. Females comprised 52.41 % of the patients. 49.52% of patients were illiterate. 15.11% of the patients were graduates or postgraduates. 93.57% of patients were married while 5.79% had lost a partner either through divorce or

death. Patients with a monthly family income above Rs. 23,000 comprised only 26.69% with a large percentage (41.80 %) of patients earning less than Rs. 11,000 per month.

**Table No.2: Distribution of clinical characteristics among persons with diabetes attending DHQ Hospital Mirpur, AJK, Pakistan (n = 311)**

Characteristics	Number	Percentage
<b>Duration of Diabetes</b>		
Less than 3 years	85	27.33
3 to 10 years	158	50.81
More than 10 years	68	21.86
<b>Treatment Mode</b>		
Oral hypoglycemic agents	161	51.77
Insulin	50	16.08
Both oral hypoglycemic agents and insulin	99	31.83
None	1	0.32
<b>Frequency of doctor visits</b>		
Once in a fortnight	98	31.51
Once a month	213	68.49
<b>Blood sugar monitoring</b>		
Twice a week	63	20.26
Once fortnightly	75	24.12
Once in three weeks	38	12.22
Monthly	135	43.41

**Table No.3: Distribution of patient education and foot care awareness among persons with diabetes attending DHQ Hospital Mirpur, AJK, Pakistan (n = 311)**

Characteristics	Number	Percentage
<b>Physician initiated lifestyle modification</b>		
Never	47	15.11
Few times	76	24.44
Regularly	188	60.45
<b>Physician imparted disease complications</b>		
Never	57	18.33
Few times	98	31.51
Regularly	156	50.16
<b>Awareness about foot care</b>		
No	239	76.84
Yes	72	23.15
<b>Suffered Foot Complications</b>		
Yes	122	39.22
No	189	60.77
<b>Amputation of foot or digit</b>		
Yes	39	12.54
No	272	87.46

Only 39.23% of patients belonged to a small family comprising of 4 or less members. 60.77% of patients had families larger than 5 members. 23.15% were gainfully employed while 41.80% of patients were dependent on other sources of income. 35.05% of patients were unemployed. (Table 1)

27.33% patients had had Diabetes for less than 3 years. 50.81% patients were sufferings from Diabetes for 3 to 10 years. More than half the patients (51.77%) were on oral hypoglycemic agents, while 31.83% of patients were using both insulin and oral hypoglycemic agents. About a third of patients (31.51%) visited their doctor weekly or fortnightly. 20.26% of patients tested their blood sugar levels twice a week while 44% tested just once a month. (Table 2)

A sizeable number of patients (39.55%) had never or rarely been guided about life style changes by their doctors. 68.17% of patients had never or rarely been guided about diabetic complications. Only 23.15 % patients were aware about foot care while the rest were largely unaware about the importance of foot care. 60.77% of patients had never suffered a foot complication. The vast majority of patients (94.21%) were satisfied with the care they received. Only 25.40% of patients were unable to afford treatment expenses. 39 patients (12.54%) had undergone an amputation of some kind due to diabetic foot complication. (Table 3) Pearson Chi-Square values were highly significant  $P < 0.0001$  for education and foot care awareness. There was no statistically significant association between education and amputation rate ( $P$  value= 0.3390). Pearson Chi-Square values were also highly significant  $P < 0.0001$  for family income and foot care awareness. There was a very statistically significant correlation between the number of doctor visits and foot care awareness ( $P$  value=0.0032)

## DISCUSSION

Diabetes has emerged as a global epidemic in recent years. With the frightening increase in numbers of diabetics, comes the need to improve health care facilities to cater for the projected increase in complications. Diabetes is expensive to treat and once complications set in the cost of care may be out of reach of a large segment of population<sup>11</sup>. Foot complications take up a huge amount of monetary and human resources. Generally diabetic patients have a poor understanding of their disease and its complications<sup>12</sup>.

Improving patient education is one way to decrease foot complications. All physicians caring for diabetic patients should take the opportunity to educate their patients regarding the disease and its complications. Patient uptake of disease education is intimately related to patient literacy. In our study 49.36% of patients were illiterate. These are a little better than literacy rates in Pakistan which are around 54.9% (UNESCO

Institute of Statistics). A study conducted in India concluded that poor formal education was associated with poor foot care knowledge underlining the relationship between education and disease knowledge<sup>13</sup>. This correlates well with our finding of Pearson Chi-Square values which were highly significant ( $P < 0.0001$ ) for education and foot care awareness.

Patient literacy is of no value if patients do not receive disease education from primary care physicians. Our study found a large gap in patient education by physicians. More than half the patients (57%) visited their doctors once a month. These monthly visits are a valuable opportunity for patient education. However, almost 40% of patients had never or rarely been educated about life style modifications. One study from Karachi found 84% of study participants had not been counseled for lifestyle changes during their treatment<sup>14</sup>. Primary care physicians should take every opportunity to educate patients about their disease and its complications. Nearly 50% of our patients had not been educated about diabetic complications. This correlates well with a study from Peshawar where only 45% of the patients had been educated about diabetes care and the main source of information was a doctor for 78% of the patients<sup>15</sup>.

Frighteningly less than a quarter of patients interviewed were aware about foot care. Poor foot care is intimately related to foot ulceration which is directly responsible for approximately 85% of all amputations performed in patients with diabetes<sup>16,17</sup>. Only 23.15% of our patients were aware about the need for foot care. This is in stark contrast to a study from India where 56.4% of the urban population and 46.6% of rural population had been educated regarding foot care in diabetes<sup>18</sup>. A South African study found 53% of the population knowledgeable on basic foot hygiene<sup>19</sup>.

The frequency of blood glucose monitoring by patients in our study was quite encouraging. All patients checked their blood sugar levels at least once a month. Some 20% checked their blood sugar levels weekly. This was significantly less than the study from Peshawar where 61% of patients checked their blood sugar in a week<sup>15</sup>.

Our study highlighted the strong correlation between education and foot care awareness ( $P < 0.0001$ ). This is in keeping with a similar trend in India, where there was a significant correlation for foot problems with family income and educational status<sup>18</sup>. We also found a highly significant correlation ( $P < 0.0001$ ) for family income and foot care awareness. Frequent interactions with health providers resulted in a statistically significant improved foot care awareness ( $P = 0.0032$ ). This was in keeping with a study from Karachi where regular followed-up patients had much better disease knowledge overall<sup>20</sup>.

## CONCLUSION

This study reveals the paucity of disease knowledge of patients. Patient education by physicians is almost non-existent in Pakistan and needs to be improved. Improving literacy will improve patient foot care awareness.

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