

# Study of Knowledge and Practice Regarding Foot Care in Diabetic Patients Visiting Nishtar Diabetic Clinic Multan.

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## **Abstract:**

*Diabetes mellitus is multifaceted disease and foot ulceration is one of it's common complication. An estimated 15% of patients with diabetes develop foot ulcer. Diabetic foot ulcer is estimated to affect 15% to 25% of people with diabetes at some time in their lives and it precedes 25% to 90% of all amputations. On an average every 30 seconds an extremity is amputated due to complications of diabetes mellitus (DM) and the majority of these amputations are secondary to foot ulcers. Poor foot care knowledge and practices is important risk factor for foot problems among diabetics.*

## **Key words**

*Diabetes mellitus, foot care, knowledge and practice.*

## **Objectives of the study**

To determine the knowledge and practices regarding foot care among diabetics with the aim of identifying and addressing barriers to prevent amputation and other complications.

## **Material and Methodology**

A cross sectional study was conducted at public diabetic clinic in Nishtar Hospital Multan. A sample of 150 patients were chosen using non probability convenient sampling in the duration of one month. A questionnaire which included demographic details, knowledge and practice of functional foot care was administered.

Data was compiled in SPSS V20 software and later analysed in Community Medicine department, Nishtar Medical University.

## **Result**

Out of total of 150 diabetic patients studied, 91 patients (60.66%) had good knowledge regarding prevention of diabetic foot while total of only 55 patients (36.66%) were found to have a good level of

practice. Poor educational status and long duration of diabetes was significantly associated with poor knowledge and poor practice of functional foot care. 125 (83.33%) diabetics knew the importance of taking anti diabetic drugs to prevent complications. 91 patients (60%) knew the Importance of keeping feet dry to avoid foot complications. 34(22%) knew the warning signs regarding diabetic foot to consult the doctor. Regarding practices, 78(52%) patients inspected their feet and toes regularly. 101(93%) washed their feet regularly. 54 (36%) trimmed their nails in time properly. 68(45%) had a habit of walking bare foot. 64(42.66%) inspected the inside of the shoes they wore. 52(34.66%) wore shoes with socks.

## **Conclusion**

Result demonstrate satisfactory knowledge on diabetic foot care but practices of preventive techniques are highly unsatisfactory. The study has highlighted the gap in knowledge and practice of foot care in diabetes mellitus patient. The majority of the patients participating in the study did not have higher education and were of low socioeconomic status. Very few people knew the warning signs regarding diabetic foot to consult the doctor. Practices of proper timely trimming of nails, regular inspection of feet, wearing socks were found to be very poor. However regular feet washing and knowledge of the importance of taking anti diabetic drugs as preventive measure was satisfactory.

## **1. Introduction**

Diabetes mellitus is a non-communicable disease with multi-organ involvement. It was known even in the ancient world as a disease that produces honey taste urine. Until recently it was believed as a disease which occurs mainly in developed countries, but more recent findings show occurrence of new cases with diagnosed type 2 diabetes mellitus in developing countries. As well as seeing increasing numbers of patients, many countries are reporting earlier onset of type 2 diabetes and its associated complications.<sup>1-2</sup>

Diabetes is associated with complications such as cardiovascular diseases, nephropathy, retinopathy and neuropathy, which can lead to severe morbidity and mortality. One of the complications associated with diabetes is peripheral vascular disease, the damage caused to the large blood vessels supplying the lower limbs. Another complication is neuropathy, which can lead to loss of sensation in feet. Later the foot can secondarily become infected, often with polymicrobial invasion and it may need to be amputated if not managed appropriately.

It is estimated that on an average 7% of the world population are diabetics now and this number is estimated to increase to 8.3% by 2030. It is also estimated that 80% of the diabetics patients live in developing countries.<sup>^</sup>Diabetic foot ulcer is estimated to affect 15% to 25% of people with diabetes at some time in their lives and it precedes 25% to 90% of all amputations.<sup>4-6</sup>

On an average every 30 seconds an extremity is amputated due to complications of diabetes mellitus (DM) and the majority of these amputations are secondary to foot ulcers<sup>7</sup>. Diabetic foot ulcer is not only a patient problem but also a major healthcare concern throughout the world. Treatment of infection in diabetic ulcer is difficult and expensive. Patients usually need to take long-term medications or become hospitalized for an extended period of time. On the other hand, more than 70% of patients who have developed foot ulcer, experience an exacerbation of the disease in the next 5 years<sup>8</sup>. The ulcer usually appears in the same extremity or the extremity of the opposite side; at least a quarter of these ulcers do not heal.<sup>9,10</sup> Diabetic foot ulcer treatment is expensive. On an average, the treatment cost for wounds in five industrialized countries was \$3096 in 2010. However, if the wound becomes complicated and amputated, the cost will rise to almost \$107900.<sup>11</sup> Therefore, based on the noble quote in health care profession “prevention is better than the treatment of the disease.”

Pakistan is a developing country with 39% poor population<sup>12</sup> who have little awareness about almost everything. According to the International Diabetes

Federation (IDF) Pakistan had 6.2 million people of age group 20-79 years with diabetes in 2003. By 2025 this number is expected to reach 11.5 million. Another 6 million or more people currently suffer from impaired glucose tolerance. This to 25% of people with diabetes at some time in their lives and it precedes 25% to 90% of all amputations.<sup>4-6</sup>

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common complications of diabetes with prevalence of 4-10%.<sup>14</sup> Pakistan was included in the International Working Group on Diabetic Foot (IWGDF) in 2006 during an international diabetic conference in Karachi. Realizing the importance of diabetic foot problems, International Diabetes Federation (IDF) chose the theme of World Diabetes Day in 2005 "Put Feet First, Prevent Amputations."<sup>15</sup>

The importance of diabetic foot care education and compliance with foot care practices has been emphasized in many studies. Also they have shown that these programs must be customized according to the local situation. In previous studies done in various parts of the world to assess the knowledge and practice of diabetic foot care has shown diverse results. While some countries show inadequate knowledge on foot care principles among patients others have shown satisfactory knowledge but poor compliance. Hence we can assume that the level of knowledge and practice may vary with the socio demographic factors of each region therefore it is essential to conduct studies to identify key lapses in diabetic foot management.

An understanding of the causes of foot diseases in diabetics will enable high-risk patients to be recognized early. It has been estimated that up to 50% of the major amputations in diabetic patients can be prevented with effective education. International Consensus on the Diabetic Foot is a prominent guide which has been found effective previously.<sup>16</sup> The Diabetes Committee of the American Orthopedic Foot and Ankle Society has also issued a guideline on proper foot care.<sup>17</sup> Foot care education is the most crucial tool for preventing lower leg amputation. Educating healthcare professionals involved in the patients daily life and also educating the patient's next of kin may constitute a more effective intervention, in combination with improved footwear, education during or even prior to ulceration.

## 2. Objectives

1. To assess the degree of knowledge among patients regarding diabetes complications.
2. To determine frequency of patients practicing preventive measures to avoid foot complications.

## 3. Material and methodology

### Study design:-

Descriptive Cross sectional study design

### Study population:-

Patients attending Nishtar Diabetic Clinic.

### Setting:-

The study was carried out on the patients visiting Nishtar diabetic clinic.

### Study duration:

Data was collected in a period of about one month from 25th July to 29th August.

### Sampling technique:-

Non probability convenient sampling.

### Sample size:-

150 patients.

### Inclusion criteria:-

Patients having Diabetes type I Patients having Diabetes type II

### Exclusion criteria:-

Patients having diabetic foot ulcer.

Patients who have already developed complications (Nephropathy, retinopathy, neuropathy) of diabetes.

### Data collection procedure:-

Data was collected by distributing a questionnaire approved by Community Medicine Department, NMU. Total 10 questions were asked, 3 to

assess the knowledge and 6 to assess the practice about diabetic foot care. Each positive answer was assigned one mark. Because controlling blood glucose level by drugs is of primary importance so this question was assigned 2 marks. On the basis of total marks obtained by each patient, score for knowledge and that for current practice for each respondent was determined. Their knowledge and current practice for foot care were classified as good and poor depending upon the score obtained. For the knowledge, if the score was >75% (3-4), it was regarded as good and if lesser it was considered poor. For practice, if score was >66% (4-6), it was regarded as good and lesser score was considered poor.

**Data analysis:-**

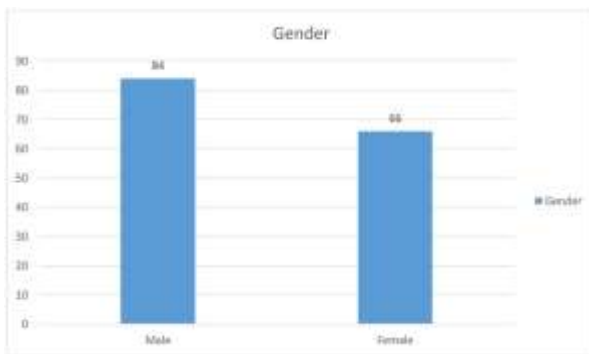
The data was entered and analyzed in a computer program SPSS V20 and reports were generated accordingly.

**4. Results**

**Table No. 1** Frequency distribution table of patients on gender basis.

n= 150

Gender	Frequency	Percentage
Male	84	56
Female	66	44

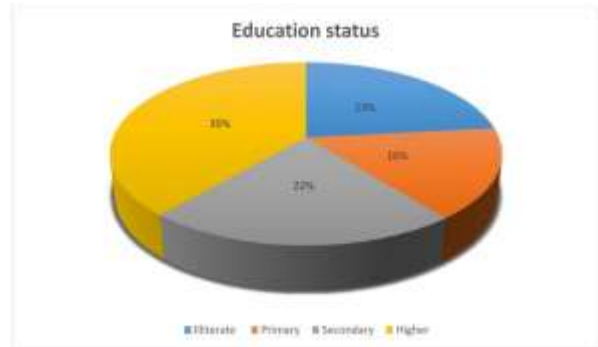


**Figure No. 1** Frequency distribution Figure of patients on gender basis.

**Table No. 2** Frequency distribution table of patients on basis of education.

n= 150

Status	Frequency	Percentage
Illiterate	35	23
Primary	24	16
Secondary	33	22
Higher	58	39

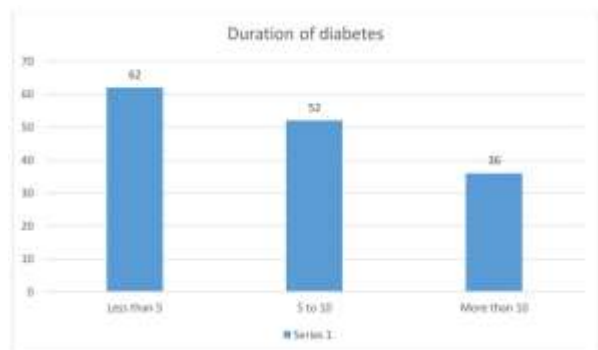


**Figure No. 2** Frequency distribution Figure of patients on basis of education.

**Table No. 3** Frequency distribution table of patients on basis of duration of diabetes.

n= 150

Duration	Frequency	Percentage
Less than 5 years	62	41.33
5-10 years	52	34.66
More than 10 years	36	24



**Figure No. 3** Frequency distribution Figure of patients on basis of duration of diabetes.

**Table No. 4** Frequency distribution table showing level of knowledge with reference to education status.

n =150

Knowledge	Education Status							
	Illiterate (35)		Primary (24)		Secondary(33)		Higher(58)	
	Frequency	%age	Frequency	%age	Frequency	%age	Frequency	%age
Good knowledge	11	31.4 %	12	50.00%	26	78.7%	42	72.4 %
Poor knowledge	24	68.5%	12	50%	7	21.3%	16	27.5 %

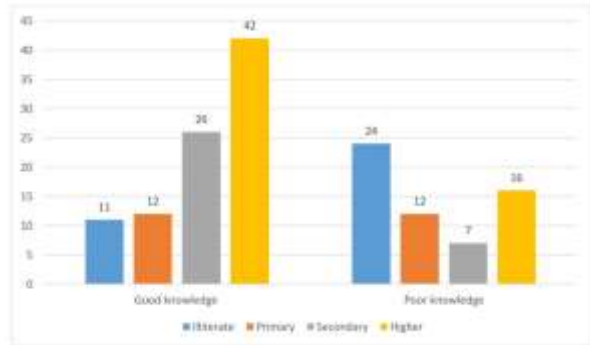


Figure No. 4 Frequency distribution Figure showing level of knowledge with reference to education status.

Table No. 5 Frequency distribution table showing level of practice with reference to education status.

n=150

Status	Education Status							
	Illiterate (35)		Primary (24)		Secondary(33)		Higher(58)	
	Frequency	%age	Frequency	%age	Frequency	%age	Frequency	%age
Good practice	6	17.2%	6	25.4%	14	42.6%	29	50%
Poor Practice	29	82.8%	18	74.6%	19	57.4%	29	50%

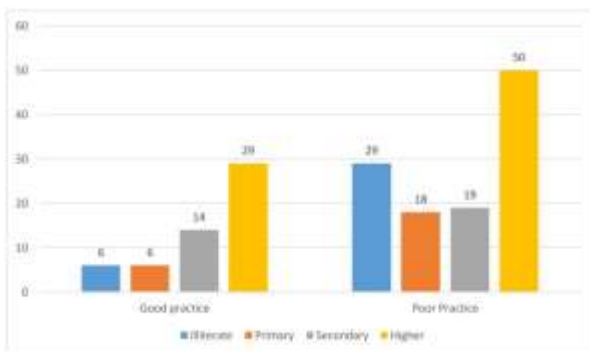


Figure No. 5 Frequency distribution Figure showing level of practice with reference to education status.

Table No. 6 Frequency distribution of people knowing the importance of taking anti diabetic drugs to prevent complications.

n=150

Status	Frequency	Percentage
Yes	125	83.33
No	25	16.66

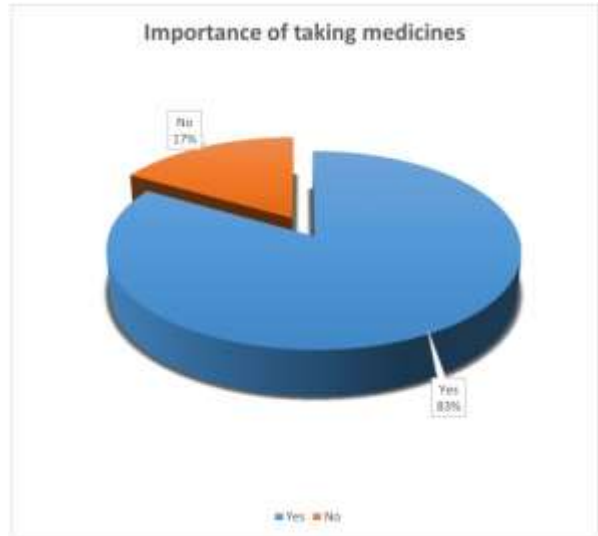


Figure No. 6 Frequency distribution of people knowing the importance of taking anti diabetic drugs to prevent complications.

Table No. 7 Frequency distribution table of people knowing the importance of keeping feet dry.

n=150

Status	Frequency	Percentage
Yes	91	60
No	59	40

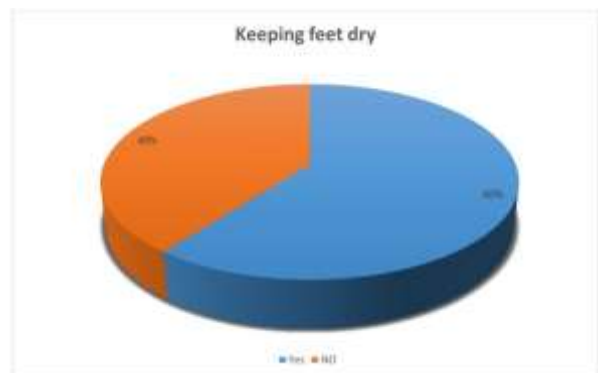


Figure No. 7 Frequency distribution Figure of people knowing the importance of keeping feet dry.

Table No. 8 Frequency distribution table showing no. of diabetics knowing the warning signs when to consult the doctor.



n=150

Status	Frequency	Percentage
Yes	34	22
No	116	78

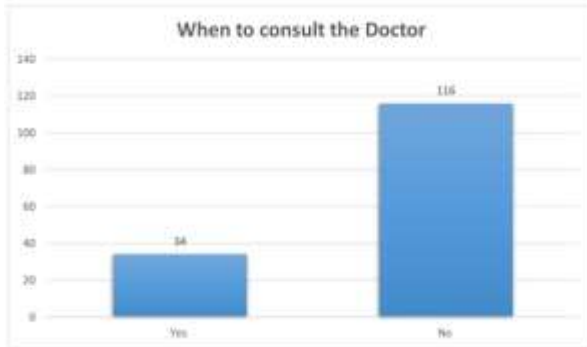


Figure No. 8 Frequency distribution Figure showing no. of diabetics knowing the warning signs when to consult the doctor.

Table No. 9 Frequency distribution of patients inspecting their feet and toes regularly.

n=150

Status	Frequency	Percentage
Yes	78	52
No	72	48

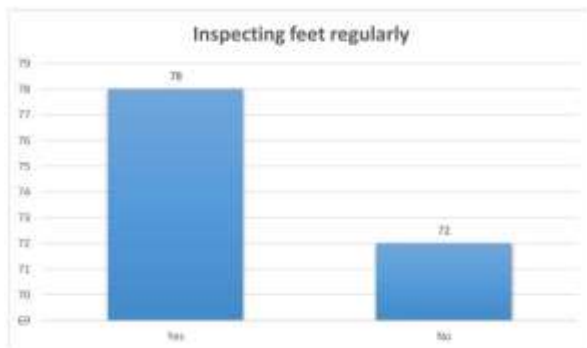


Figure No. 9 Frequency distribution of patients inspecting their feet and toes regularly.

Table No. 10 Frequency distribution of people who wash their feet regularly.

n=150

Status	Frequency	Percentage
Yes	101	93.33
No	25	6.77

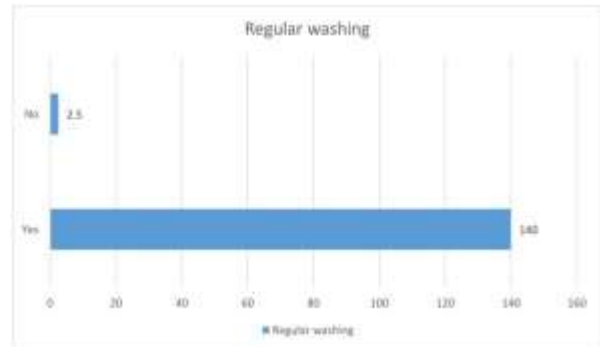


Figure No. 10 Frequency distribution of people who wash their feet regularly.

Table No. 11 Frequency distribution of people who trim their nails on timely basis.

n=150

Status	Frequency	Percentage
Yes	54	36
No	96	64

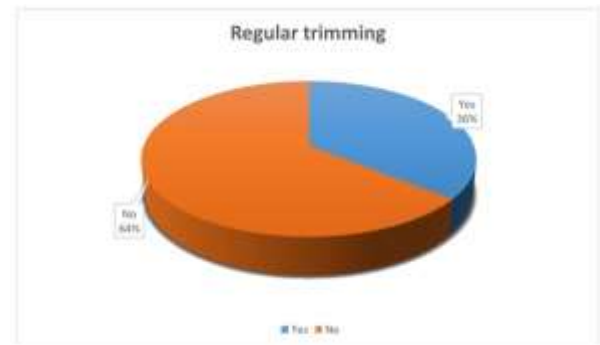


Figure No. 11 Frequency distribution of people who trim their nails on timely basis.

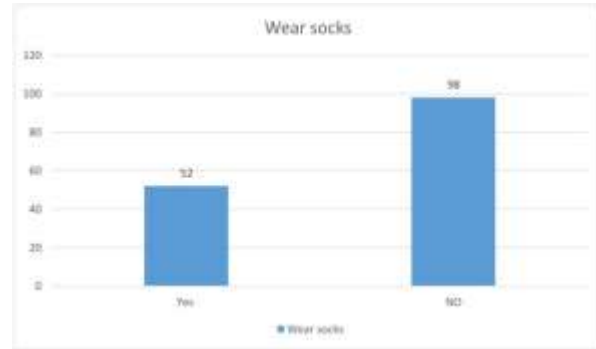
Table No. 12 Frequency distribution of patients who are in a habit of walking bare foot

n=150

Status	Frequency	Percentage
Yes	36	24%
No	114	76%



**Figure No. 12** Frequency distribution of patients who are in a habit of walking bare foot

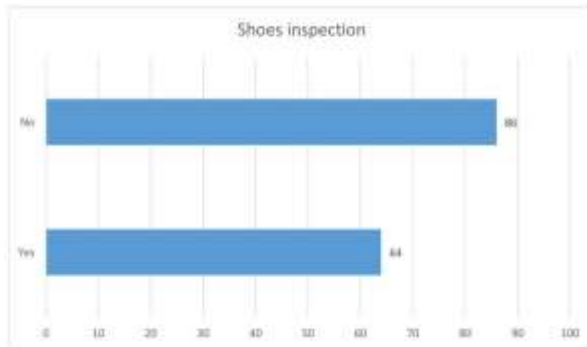


**Figure No. 14** Frequency distribution of patients who wears shoes with socks.

**Table No. 13** Frequency distribution of patients who inspect the inside of shoes they wear.

n=150

Status	Frequency	Percentage
Yes	64	42.66
No	86	57.33



**Figure No. 13** Frequency distribution of patients who inspect the inside of shoes they wear.

**Table No. 14** Frequency distribution of patients who wears shoes with socks.

n=150

Status	Frequency	Percentage
Yes	52	34.66
No	98	65.33

## 5. Discussion

Our study is based on KAPS studies which suggests that the right information (knowledge) will influence attitudes and thus change the behaviours. Diabetic foot care is an important part of diabetic treatment and preventions as the lack of its knowledge may lead to many complications such as redness/bleeding between toes; foot ulcers etc. So the knowledge about its prevention is necessary and is the responsibility of the health care provider and the patient as well.

The study comprised of 150 subjects taken from Nishtar hospital Multan. In this study out of the 150 respondents, the mean age was found to be 48, the age at which diabetes type 2 is very common. These patients were elder and asymptomatic and had diabetes for longer durations which resulted in good knowledge but poor medical seeking behaviours and practice. Moreover, we found that the majority of the patients participating in the study did not have secondary education and were of low socioeconomic status. The knowledge of appropriate foot care has been suggested to be positively influenced by patient education which in turn reduces the risk of foot ulceration and amputation in high-risk diabetics. The association between education and knowledge may be due to the fact that, educated patient were able to read and understand some of educational supportive materials and also use information technology to obtain more information about the disease.

Furthermore, it is showed that 60.66% had good knowledge regarding prevention of diabetic foot and 39.34% had poor knowledge. This is in contrast to the study conducted in Jinnah hospital Lahore 18 where only 40% had satisfactory knowledge and 60%

had poor knowledge. Thus we can say that the probability of good knowledge may arise from staying in diabetes for long periods. So a good proportion of the people(83.3%) knew about the complications which could arise by not taking the diabetic treatment but they didn't know about the warning signs after which they should consult the doctor. This deficiency in the knowledge may be due to poor communication between the doctors and the patients and also lack of counseling by the doctors and nurses as result of busy clinic schedule.

In our study 93% of the individuals washed their feet regularly similar to 88.87% people in the study of Jinnah Hospital Lahore Pakistan(2009) 17. This is a good proportion but the lesser proportions also couldn't be ignored and they should be educated about the hygiene of feet and infection prone skin in diabetes. Inspection of the feet regularly and the inside of footcare was found in 52% and 42.66% respectively, comparable to the 59.1% and 52.33% people found in a study conducted in Nigeria in November 2009 21. Poor practice was seen of wearing shoes with socks (34.66%) and trimming of nails(36%).These low proportions were alarming and they may be because all the chronic patients are taken into curative measures instead of being taken into preventive measures.

Thus, patient education on the prevention of diabetic foot is imperative and should be incorporated into the routine care of patients with diabetes both in the hospital and in the community. Time must be allotted to communication, information and education during clinic sessions. Furthermore, the education of physician is highly imperative to complement and reinforce the behaviours of patient with regards to foot care; they need to learn and imbibe the skills of counseling and risk assessment.

Regarding the practice, this study shows 36.66% of the respondents with good practice only and 63.34% with poor practice. Similar and comparable results of poor practice of 61% people was found in the study conducted in Pakistan in September 13-14 in a tertiary care unit 22. But contrasting results were obtained from the study carried out in Sri Lanka in 2010 where only 47.3% had poor practice. 20 The other findings on two most important behavioural risk factors leading to diabetic foot complications that are walking barefoot indoors and outdoors showed that only 45% had a habit of walking barefoot. This is compatible with a South Africa study where 35% reported of walking barefoot whereas this proportion was much less in Saudi Arabia study 19 where only

18% walk barefoot. This shows that the individuals were poorly knowledgeable regarding the fact that walking bare foot could lead to further complications like foot ulcers.

## 6. Conclusion

Result demonstrate satisfactory knowledge on diabetic foot care but practices of preventive techniques are highly unsatisfactory. The study has highlighted the gap in knowledge and practice of foot care in diabetes mellitus patient. The majority of the patients participating in the study did not have higher education and were of low socioeconomic status. Very few people knew the warning signs regarding diabetic foot to consult the doctor. Practices of proper timely trimming of nails, regular inspection of feet, wearing socks were found to be very poor. However regular feet washing and knowledge of the importance of taking anti diabetic drugs as preventive measure was satisfactory.

## 7. Limitations

- It is a hospital based observational study evaluating patients who were referred to the tertiary care hospital.
- So our study does not properly reflect the total population and thus cannot be generalized.
- The data collection tool was self-generated and carried the risk of recall bias by the participants.
- The patients coming to the clinic mostly were of low socioeconomic status so our study was relevant to a specific class.
- Time constraints were present throughout the study.
- There were language barriers due to which a lot of problems arose.

## 8. Recommendations

- Patients with diabetes should be educated regarding all risk factors for diabetic foot ulcer.
- All individuals with diabetes should receive an annual foot examination to identify high risk foot conditions.
- Foot care education should be given at Primary Health Care (BHU RHC).

Diabetic foot self-care education should be given on media and supported by leaflets given in hospitals.



Since the risk out weights the benefits patients should consider:

- Wearing comfortable shoes
- Washing of feet regularly
- Regular trimming of nails
- Taking balanced diet including fruits vegetables etc all in proper amount
- Avoid smoking
- Take stairs instead of elevators.
- Physician should always be up to date with the latest information regarding foot care.

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