

# Awareness of Foot Care among Diabetic Patients in Civil Hospital, Karachi

Corresponding Author:

**Aisha Farooq<sup>1</sup>**

Address: B-103 block C, North  
Nazimabad, Karachi.

Email ID: [aishaumer987@gmail.com](mailto:aishaumer987@gmail.com); [Aishaumer987@gmail.com](mailto:Aishaumer987@gmail.com)

Co-authors:

**Areeba Raees<sup>1</sup>** [areeba.reebx.5@gmail.com](mailto:areeba.reebx.5@gmail.com)

**Abubakar Tauseef<sup>2</sup>** [abubakartauseef93@gmail.com](mailto:abubakartauseef93@gmail.com)

**Sohaib Khan<sup>1</sup>** [sohaibkhan1@live.com](mailto:sohaibkhan1@live.com)

**Usman Tauseef<sup>2</sup>** [abubakartauseef93@gmail.com](mailto:abubakartauseef93@gmail.com)

**Dr Tanvir Alam<sup>3</sup>** [alamtanviralam@yahoo.com](mailto:alamtanviralam@yahoo.com)

<sup>1</sup>4<sup>th</sup> year MBBS students at Dow Medical College, Dow University of Health Sciences, Karachi.

<sup>2</sup> House Officer at Civil Hospital, Karachi, Pakistan.

<sup>3</sup> Associate Professor of Medicine, Civil Hospital, Dow University of Health sciences, Karachi.

## **UNDERTAKING:**

The whole manuscript is reviewed and approved by all investigators and there is not any conflict of interest between us. This whole study or any part of manuscript never sent for any publication.

Our study also includes three table and we are going to bear the cost of its publication if any. This study has been ethically approved by the office of the director research (DUHS).

## **IMPORTANCE OF ARTICLE:**

Our study focuses on multiple ideas like it focuses on the risk factors associated with diabetic foot disease, knowledge and practice of diabetic patients about their disease.

The International Journal of Research (IJR) is well-known for its high standard and authenticity, which attracts people involved in all lines of medical profession to submit their research articles to it. Furthermore, publication in a recognized journal is both a source of honor, dignity and produces positive results in professional future.

## **WORD COUNT:**

ABSTRACT: 346 words including Mesh words.

MAIN ARTICLE: 2746 Words

UNDERTAKING



I, AISHA FAROOQ, and my below mentioned colleagues are submitting our original *research titled* "Awareness of Foot Care among Diabetic Patients in Civil Hospital, Karachi "to the International Journal of Research for publication.

We agree that upon acceptance by International Journal of Research, all copyright ownership for the article is transferred to the journal. We, the co-authors of this article, have contributed significantly to and share in the responsibility for above. The stipulate shows that the material submitted to this journal is new, original and has not been submitted to another publication for concurrent consideration.

The editors of International Journal of Research have the right to suggest changes, hold or reject from publication at any stage. The editor also holds the right to retract any article on account of ethical misconduct after the printing of any article.

We also attest that any human and /or animal studies undertaken as part of the research from which this manuscript was derived are in compliance with regulation of our institution and with generally accepted guidelines governing such work.

We further attest that we have herein disclosed any and all financial or other relationships which could be construed as a conflict of interest and that all sources of financial support for this study have been disclosed and are indicated in the acknowledgement.

Yours' sincerely,

AISHA FAROOQ and the co-authors.

#### **ABSTRACT:**

***Participants and Method:*** It was a questionnaire based descriptive study conducted during the period of August 2015 till March 2016. In this study all data was collected by the co-investigators during a period of 15<sup>th</sup> august 2015 to 15<sup>th</sup> march 2016, 200 patients were selected on the basis of internationally used equations used to calculate the sample size, and in the end data was analyzed by using SPSS 20.0 version.

***Results:*** This study shows that most common risk factor associated with diabetic foot disease is neuropathy which forms 61% cases in case of males and 77% cases in case of females, being seconded by smoking among men with a frequency of 43% and high fasting glucose level among women with a frequency of 62%. Also this study shows that that 93% of males knows that they should take medications because they are much prone to the complications while on the other side among females great number of 90% of females knows that they should take medications because they are much prone to the complications. Also this study shows that about 96% of males practices to wash their feet daily with warm water while on the other hand 95% (great number of females) practices to wash their feet daily with warm water.

**Conclusion:** *this study shows that there are few most common risk factors associated with Diabetic foot disease, and all of these risk factors can be controlled by maintaining blood glucose level both fasting and random within normal reference range as by doing this we can reduce the risk of Diabetes complications, ultimately we can cut down the frequency of Diabetic foot disease. Also this study shows that our subjects although have much knowledge and also practices few aspects but in general they are lacking in other aspects so by increasing awareness about diabetes and diabetic foot care we can cut down the rate of diabetic foot disease, a great threat to the world.*

**MesH words:** Awareness; Foot care; Diabetes; Civil Hospital; KARACHI

### **Introduction**

Diabetes Mellitus (DM) is a chronic metabolic condition characterized by glucose intolerance associated with either insulin deficiency or insulin resistance.<sup>1-4</sup> There are 3 types of Diabetes.<sup>2</sup> Type-1, also called insulin dependent or juvenile diabetes mellitus, characterized by loss of insulin producing Beta cells. Type-2 also referred to as maturity onset diabetes mellitus, can be due to a defect in insulin secretion and/or a reduced sensitivity to insulin. Patients with maturity onset diabetes of the young (MODY) have an impaired secretion of insulin, with either minimal or no defect in the action of insulin. The third type is Gestational diabetes which occurs during pregnancy.<sup>5</sup>

Approximately 200 million people around the world are dealing with this major health problem.<sup>6</sup> The total number of people with diabetes is projected to rise to 366 million in 2030.<sup>7</sup> DM can lead to serious complications causing mortality and morbidity in diabetic patients, among which diabetic foot ulcer is very common. The incidence of foot ulcers among people with diabetes ranges from 8% to 17%.<sup>8</sup> Foot ulcers can cause severe disability and hospitalization to patients and considerable economic burden to families and health systems.<sup>9</sup> About 14-24% will require an amputation.<sup>10</sup> In addition 30-50% of first time

amputees will require an additional amputation within 1-3 years and 50% will die of an initial major amputation.<sup>11</sup>

Peripheral vascular disease and neuropathy accounts for the major risk factors for DFU and amputations.<sup>11</sup> Autonomic neuropathy can cause increased blood pooling and swelling in the foot. Motor neuropathy leads to atrophic changes in the foot musculature that cause foot deformity and decreased joint mobility. These problems subsequently lead to an area of increased plantar foot pressure. The lack of protective sensation from sensory neuropathy leads to repetitive trauma from an area of high pressure that results in ulceration. Peripheral vascular disease has been observed to affect vessels below the knee in patients with diabetes. Even in the face of non-obstructed vessels, impaired microvascular reactivity diminishes blood supply to ulcerated areas.<sup>11</sup> The majority of foot ulcers appear to result from minor trauma in the presence of sensory neuropathy.<sup>12</sup>

Other risk factors including improper foot care practice, poor foot hygiene, ill fitting foot wear and bare foot gait also contribute in the development of DFU.<sup>13</sup> It is estimated that 60-80% of foot ulcers will heal, 10-15% will remain



active and 5-24% will finally lead to limb amputation<sup>14</sup>

Peripheral and nerve vessels disorders leads to foot ulcer and superadded infection which causes foot gangrene and other complications. This is one of the main reasons for hospital admission of diabetic patients.<sup>15</sup>

Osteo-myelitis and gangrene may develop from inadequate blood supply and infection. Risk factors for amputation include being older, male, or a member of certain racial/ethnic groups, having poor glycemic control, having diabetes for a longer period, and practicing or receiving poor preventive health care.<sup>16</sup>

Patients' awareness about proper foot care is important in preventing diabetic foot problems and amputation. In order to reduce the incidence of foot ulcers and complication, awareness should be translated to proper practice foot care.<sup>17</sup>

In Pakistan, majority of patients with diabetes do not pay proper attention to their feet. An important reason of this attitude is that patients are not provided with foot care education and therefore remain unaware of the adverse consequences of neglect.<sup>18</sup>

Regular foot examination, patient education, simple hygienic practices, provision of appropriate foot wear and prompt treatment of minor injuries can decrease ulcer incidence by 50% and eliminate the need for major amputations in non-ischemic limbs.<sup>18</sup>

### **METHODS AND METHODOLOGY:**

The study was conducted at medical units of Civil hospital Karachi,. It's a questionnaire based descriptive study conducted during a period of 7 months. From 15<sup>th</sup> august 2015 till 15<sup>th</sup> march 2016.

Initially this topic was decided and Performa was designed with the help of our supervisor and

cooperation of all the Co-Investigators .After all ifs and buts we finalized the per-forma which was divided into two sections ,first section includes bio data containing name(as optional), age, gender, occupation and location of the Subjects of the study. Second section comprises of presence of risk factors i.e neuropathy, vasculo-pathy /absence of Dorsalis Pedis pulsation, foot deformity, tobacco smoking, alcohol intake, fasting glucose and other morbidity for diabetic foot ulcers. Third and fourth sections comprise of knowledge and practice of diabetic foot care respectively. Study was ethically approved by institute of research board (I.R.B). A sample size of 200 was calculated by using internationally used equations which are widely used to calculate the sample size.

Only those who were suffering from diabetes (type 1 and 2) and were admitted in medical units at civil hospital Karachi were included while all those who negated consent regarding participation in this study and who were not suffering from diabetes were excluded from our study. After greetings and taking verbal consent from the patients, all questions in the Per-forma were asked from the patients during one on one conversation by all the subjects of the study. After complete filling of the Per-forma data is entered and statistically analyzing by using SPSS 20.0 version and results were obtained through it as per given below.

### **RESULTS:-**

A total of 200 individuals are included in this study out of which 89(44.5%) are males and 111(55.5%) are females. This study shows that

most common risk factor associated with diabetic foot is neuropathy among both males and females with males having a frequency of 61% and females having a frequency of great 77%, being seconded by smoking among males and high fasting glucose level among females having a frequency of 43% among males and 62% among females. **(TABLE I).**

Also patients with diabetes once considered that they won't have enough knowledge about their disease but our study shows that 93% of males knows that they should take medications because they are much prone to the complications while on the other side among females great number of 90% of females knows that they should take medications because they are much prone to the complications, being seconded by 75% of males who knew this thing that they should have to look after their foot because of the risk of foot ulcer in contrast to 71% of females who knew this thing that they should have to look after their foot because of the risk of foot ulcer. **(TABLE II)**

Also this study shows great statistics about the practice of diabetic foot care among patients with diabetes this study shows that about 96% of males practices to wash their feet daily with warm water while on the other hand 95% (great number of females) practices to wash their feet daily with warm water, in addition to that of this second most common practice being practiced for the diabetic foot care by the patients are trimming of toe nails straight across among males and measurement of foot size before wearing a new foot ware with a frequency of 77% among males and 74% among females. **(TABLE III).**

### **DISCUSSION:-**

As diabetes is one of the most prevailing diseases world-wide, a lot of work has been done on it. A study conducted by a group of doctors show that

nephropathy is seen in 23% of individuals while on the other hand in our study it shows that 61% cases in men and massive 77% cases among women have associated nephropathy leading to diabetic foot diseases among them(19)

Another study conducted by team of Pakistani doctors at Civil hospital, Karachi shows that 63.3% of great percentage shows vasculopathy associated with their diabetic foot disease in contrast to our study which shows that only 11% of males and 5% of females have associated vasculopathy ,which is much lesser as compared to study conducted in 2009, so we can say that during the period of 7 years general population has got awareness which has reduced the associated vasculopathy by 500 folds(20).

A study conducted in Manoufia University Hospital shows that among patients with diabetic foot ulcers 50% are smokers in contrast to our study which shows that 43% of males and 11% of females doing smoking developed diabetic foot ulcers (21).

A study conducted in north of Iran shows that 8% of population has associated heavy alcohol intake with their diabetic foot ulcer, in contrast to our study which shows that 5% cases among males and only 1% case among females have heavy alcohol intake associated with diabetic foot ulcer(22).

A study published in journal of Pakistan medical association shows that 78% of cases knows that they should take medications for diabetes to prevent foot complications in contrast to that of great number of 93% among males and 90% of females having knowledge about it(23).

A study conducted in Nigeria shows that 70% of individuals they randomly selected have knowledge of self care in case to prevent diabetic foot in contrast to a little bit more i.e:-73% in case

of men and a little bit lesser i.e:-68% in case of women, showing that men has comparatively more knowledge of self care as compared to women(24).

A study conducted in Tanzania shows that 48% of individuals get their feet examined regularly in contrast to that of 49%( a little more) among men and a great number of 77% of cases among women, who had examined their feet regularly(25).

### **CONCLUSION:-**

This study shows that there are few most common risk factors associated with Diabetic foot disease, and all of these risk factors can be controlled by maintaining blood glucose level both fasting and random within normal reference range as by doing this we can reduce the risk of Diabetes complications, ultimately we can cut down the frequency of Diabetic foot disease. Also this study shows that our subjects although have much knowledge and also practices few aspects but in general they are lacking in other aspects so by increasing awareness about diabetes and diabetic foot care we can cut down the rate of diabetic foot disease, a

### **REFERENCES:**

- [1] DESALU<sup>1</sup>, F. K. SALAWU<sup>2</sup>, A. K. JIMOH<sup>3</sup>, A. O. ADEKOYA<sup>4</sup>, O. A. BUSARI<sup>3</sup> and A. B.;DIABETIC FOOT CARE: SELF REPORTED KNOWLEDGE AND PRACTICE AMONG PATIENTS ATTENDING THREE TERTIARYHOSPITAL IN NIGERIA. GHANA MEDICAL JOURNAL.JUNE 2011.VOLUME 45,NO.2; 60-4
- [2] Andrew J, Gunne R, Jan A. The global burden of diabetes foot disease. Lancet. 2005;366:1719–24.

[3] Abbas ZG, Archibald LK. Epidemiology of the diabetic foot in Africa. Med Sci Monit. 2005;11:262–70.

[4] Barshes NR, Sigireddi M, Wrobel JS, Mahankali A, Robbins JM, Koungias P, et al. The system of care for the diabetic foot: objectives, outcomes, and opportunities. Diabet Foot Ankle. 2013;4:21847.

[5] DR. NOREEN RAHAT HASHMI, DR. IRAM MANZOOR, DR. SEEMA DAUD ;DIABETES MELLITUS: AWARENESS AMONG INDIVIDUALS ATTENDING OUTPATIENT DEPARTMENT OF GHURKI TRUST TEACHING HOSPITAL. Professional Med J. March 2008;15(1):96-100

[6] Seema Hasnain, Naheed Humayun; Knowledge and practices regarding foot care in diabetic patients visiting diabetic clinic in Jinnah Hospital, Lahore. J Pak Med Assoc.Oct 2009.Vol.59 NO.10;687-90

[7] Paul Rheeder, MMed (Int Med), FCP (SA), MSc (Clin Epi), PhD, Marie Venn, medical student, Ewald de Korte, medical student,Danie van Zyl, MMed (Int Med), FCP (SA), MSc (Clin Epi);Knowledge of foot care in people with diabetes in a tertiary care setting. JEMDSA. Dec 2008,Vol.13,NO.3;105-7

[8] Hanu George, Rakesh PS, Manjunath Krishna, Reginald Alex, Vinod Joseph Abraham, Kuryan George, Jasmin H. Prasad;Foot Care Knowledge and Practices and the Prevalence of Peripheral Neuropathy Among People with Diabetes Attending a Secondary Care Rural Hospital in Southern India.Journal of Family

Medicine and Primary Care. January 2013:  
Volume 2 : Issue 1;27-32

[9] Giorgia De Berardisa, Fabio Pellegrinia, Monica Franciosia, Maurizio Belfiglio, Barbara Di Nardoa, Sheldon Greenfieldb, Sherrie H. Kaplanb, Maria C.E. Rossia, Michele Saccoa, Gianni Tognonia, Miriam Valentinia, Antonio Nicoluccia, T; QuED Study Group-Quality of Care and Outcomes in Type 2 Diabetes. Are type 2 diabetic patients offered adequate foot care? The role of physician and patient characteristics. *Journal of Diabetes and Its Complications* 19. 15 Feb 2005;319-27

[10] HAU PHAM, DPM DAVID G. ARMSTRONG, DPM CAROLYN HARVEY, DPM, LAWRENCE B. HARKLESS, DPM JOHN M. GIURINI, DPM ARISTIDIS VEVES, MD; Screening Techniques to Identify People at High Risk for Diabetic Foot Ulceration. *DIABETES CARE*, MAY 2000, VOLUME 23 NO.5; 606-611

[11] MARGUERITE J. MCNEELY, MD EDWARD J. BOYKO, MD JESSIE H. AHRONI, MN VICTORIA L. STENSEL, GAYLE E. REIBER, PHD DOUGLAS G. SMITH, MD ROGER E. PECORARO, MDT.; The Independent Contributions of Diabetic Neuropathy and Vasculopathy in Foot ulcers. How great are the risks? *DIABETES CARE*, VOLUME 18, NO 2, FEB 1995; 216-19

[12] Faraja S. Chiwanga<sup>1\*</sup> and Marina A. Njelekela; Diabetic foot: prevalence, knowledge, and foot self-care practices among diabetic patients in Dar es Salaam, Tanzania – a cross-sectional study. *Chiwanga and Njelekela Journal*

of Foot and Ankle Research. 5 JUNE 2015  
8:20;1-7

[13] Awole Seid<sup>1</sup> and Yosief Tsige ; Knowledge, Practice, and Barriers of Foot Care among Diabetic Patients Attending Felege Hiwot Referral Hospital, Bahir Dar, Northwest Ethiopia. Hindawi Publishing Corporation, *Advances in Nursing* Volume 2015, 8 December 2014; 1-9

[14] Bijoy C V\*, Feba B, Vikas R C, Dhandapani C, Geetha K, Vijayakumar; Knowledge Assessment and Patient Counseling on Diabetic Foot Care. *Indian Journal of Pharmacy Practice*, Volume 5 Issue 2, Apr-June 2012; 11-15

[15] Abdullah M Al-Wahbi; Impact of a diabetic foot care education program on lower limb amputation rate. *Dovepress Journal: Vascular Health and Risk Management* 2010; 6; 923-934

[16] Mahdi A. Qadi, MD, FFCM (KFU) and Hasan A. Al Zahrani, MD, FRCS (GLASGOW); Foot Care Knowledge and Practice among Diabetic Patients Attending Primary Health Care Centers in Jeddah city. *JKAU: Med.Sci.*, Vol.18 No.2, January 2011; 55-71

[17] Nadia Saeed; Frequency of patients with diabetes taking proper foot care according to international guidelines and its impact on their foot health. *JPMA*. Vol. 60, NO.9, September 2010; 732-35



- [18] L.O.Akoko, A.Lufti; Challenges among patients attending diabetic clinic:a low resource country experience.East and Central African Journal of Surgery, Vol.19(3). Nov/Dec 2014;22-28
- [19] Hajieh Shahbazian, Leila Yazdanpanah and Seyed Mahmuod Latifi; Risk assessment of patients with diabetes for foot ulcers according to risk classification consensus of International Working Group on Diabetic Foot (IWGDF); Pak J Med Sci. 2013 May-Jun; 29(3): 730–734.
- [20] Abdul Rahman, Mahmood Moizuddin, Masood Ahmad, Manzar Salim; Vasculopathy in patients with diabetic foot using doppler ultrasound; Pak J Med Sci April - June 2009 (Part-II) Vol. 25 No. 3 428-43.
- [21] Nabil Abd El Fatah Al Kafrawy, Ehab Ahmed Abd El-Atty Mustafa, Alaa El-Din Abd El-Salam Dawood, Osama Mohammed Ebaid, Omnia Mahmoud Ahmed Zidane; Study of risk factors of diabetic foot ulcers; Menoufia Med J 2014;27:28-34.
- [22] Nasser Janmohammadi, Mohammad Reza Hasanjani Roushan, Zoleika Moazezi, Mohammad Rouhi, Sayed Mokhtar Esmailnejad Gangi and Masoud Bahrami; Epidemiological characteristics of diabetic foot ulcer in Babol, north of Iran: a study on 450 cases; Caspian J Intern Med. 2011 Autumn; 2(4): 321–325.
- [23] Seema Hasnain, Naheed Humayun Sheikh; Knowledge and practices regarding foot care in diabetic patients visiting diabetic clinic in Jinnah Hospital, Lahore; (JPMA 59:687; 2009).
- [24] Idongesit L. Jackson, Maxwell O. Adibe, Matthew J. Okonta, and Chinwe V. Ukwue; Knowledge of self-care among type 2 diabetes patients in two states of Nigeria; Pharm Pract (Granada). 2014 Jul-Sep; 12(3): 404.
- [25] Faraja S. Chiwanga and Marina A. Njelekela; Diabetic foot: prevalence, knowledge, and foot self-care practices among diabetic patients in Dar es Salaam, Tanzania – a cross-sectional study; Journal of Foot and Ankle Research 2015;8:20.

## **TABLE I:-**



Risk Factors for diabetic foot ulcer		Gender of patient		P-VALUE
		male n(%)	female n(%)	
Neuropathy	<i>present</i>	54(61%)*	86(77%)*	0.000
	<i>Absent</i>	35(39%)	25(23%)	
Vasculopathy	<i>Present</i>	11(12%)	6(5%)	
	<i>Absent</i>	78(88%)	105(95%)	
Foot deformity	<i>Present</i>	17(19%)	19(17%)	
	<i>Absent</i>	72(81%)	92(83%)	
Smoking	<i>Present</i>	38(43%)**	17(15%)	
	<i>Absent</i>	51(57%)	94(85%)	
Alcohol intake	<i>Present</i>	4(4%)	1(1%)	
	<i>Absent</i>	85(96%)	110(99%)	
High fasting glucose	<i>Present</i>	33(37%)	69(62%)**	
	<i>Absent</i>	56(63%)	42(38%)	

\*most common risk factor for diabetic foot ulcer

\*\*Second most common risk factor for diabetic foot ulcer

#### **TABLE II:-**

knowledge of diabetic foot care		Gender of patient		P-VALUE
		male n(%)	female n(%)	
Diabetic patients should take medication regularly because they are liable to get complications?	<i>present</i>	83(93%)*	100(90%)*	0.000
	<i>absent</i>	6(7%)	11(10%)	
Diabetic patients should look after their feet because they may not feel minor injury to their feet	<i>present</i>	55(62%)	66(59%)	
	<i>absent</i>	34(38%)	45(41%)	
Diabetic patients should look after their feet because wounds may not heal quickly?	<i>present</i>	65(73%)	76(68%)	
	<i>absent</i>	24(27%)	36(32%)	
Diabetic patients should look after their feet because of risk of foot ulcer?	<i>present</i>	67(75%)*	79(71%)**	
	<i>absent</i>	22(25%)	32(29%)	
Diabetic patients should not smoke as smoking increases risk of poor circulation to feet	<i>present</i>	48(65%)	50(45%)	
	<i>absent</i>	41(35%)	61(55%)	

\*most common

\*\* Second most common

#### **TABLE III:-**

Practice of diabetic foot care		Gender of patient		P-VALUE
		Male n (%)	female n(%)	
Do you inspect your feet regularly?	<i>present</i>	44(49%)	80(72%)	<b>0.000</b>
	<i>absent</i>	45(51%)	31(28%)	
Do you wash feet regularly with warm water?	<i>present</i>	86(96%)*	105(95%)*	
	<i>absent</i>	3(4%)	6(5%)	
Do you trim toe nails straight across?	<i>present</i>	69(77%)**	64(58%)	
	<i>absent</i>	20(23%)	47(42%)	
Do you measure your foot size when last you bought foot wear?	<i>present</i>	52(58%)	82(74%)**	
	<i>absent</i>	37(42%)	29(26%)	
Did you ever inspect inside of foot wear?	<i>present</i>	17(19%)	82(74%)	
	<i>absent</i>	72(81%)	29(26%)	
Do you regularly walk bare-foot?	<i>present</i>	25(28%)	39(35%)	
	<i>absent</i>	64(72%)	72(65%)	
Do you clean nails with sharp instruments?	Present	20(22%)	25(22%)	<b>0.000</b>
	absent	69(78%)	86(78%)	
Do you add irritants to water before foot cleaning?	present	20(22%)	30(27%)	
	absent	69(78%)	81(73%)	

\*most common practice

\*\* Second most common practice