



ORIGINAL ARTICLE

Evaluation of knowledge, attitude and awareness about diabetic foot associated complications in Karachi

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Abstract

Diabetes mellitus (DM) is a group of metabolic disorders in which there is high blood sugar level for a protracted time. Diabetic foot is mainly caused by diabetes. The prospective, cross sectional study was conducted by the medical professional students of Jinnah University for Women to investigate the level of knowledge, attitudes and awareness regarding diabetic foot. The survey was conducted and questionnaire was made available to study participants in Karachi. As the responses were reported by sample size of 100 participants, the data was collected and analyzed by the students of Jinnah University for Women. The clear majority of respondents were females (83.2%) as compared to male (16.8%) under the age group of 18-30 (85.2%), 31-40 (2.8%), and 41-50 (7%), with married (18.3%) and unmarried (81.7%) marital status. The responses were predominant from urban side (100%) as compared to rural side (0.00%). The awareness related to the qualification of diploma was (3%), bachelors (82%), masters (5.5%) and doctorates (9.5%) about diabetic foot. The present study results showed moderate awareness about diabetic foot, attitude of participants towards diabetic foot and knowledge of diabetic foot among participants. Regular surveillance is warranted along with collaborative efforts to improve understanding, management and prevention of this disorder.

Keywords

Diabetes mellitus
Diabetic foot
Knowledge
Awareness
Attitude

To Cite This Article: Ahmed R and Iqbal Y, 2017. Evaluation of knowledge, attitude and awareness about diabetic foot associate complications in karachi. *J Toxicol Pharmaceut Sci*, **1(2)**, 85-90.

Introduction

Diabetes Mellitus (DM) is a group of metabolic diseases which exhibit a high blood sugar level for protracted time (Time, 2016). Symptoms associated with high blood sugar level include; increased thirst and hunger and frequent urination. DM can cause several complications if it is left untreated (Beagley et al., 2014). Its acute complications include; non-ketotic hyperosmolar coma, diabetic ketoacidosis or death (Aljasir et al., 2010). Serious chronic complication includes; stroke, heart attack, foot ulcers, damage to eyes and chronic kidney failure (Beagley et al., 2014).

Diabetes is caused either due to not enough production of insulin by pancreas or inappropriate response of cells of body to the insulin produced. Three

main types of DM are: 1). Type-I DM; it results when pancreas fail to produce enough insulin. It was previously referred as IDDM (insulin dependent diabetes mellitus) or Juvenile diabetes. Its cause is not known. 2). Type-II DM; it starts with insulin resistance. Cells fail to respond properly to insulin (Tao et al., 2015). Lack of insulin also develops as the disease progresses. It was previously known as NIDDM (non-insulin dependent diabetes mellitus) or Adult on-set diabetes. Primary causes include not enough exercise and excessive body weight. 3). Gestational Diabetes; it occurs in pregnant women who develop high blood sugar levels without having any previous diabetic history (Omer et al., 2015). Treatment and preventions consist of regular physical exercise, avoiding tobacco use, maintenance of a healthy diet and a normal body

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weight. Proper foot care and blood pressure control are important measures for people having DM. Type-I is managed with insulin injections and Type-II can be treated with medication without or with insulin injections (Begum et al., 2015).

Nerve damage occurs that can decrease sensitivity to foot pain and it results in wounds that are painless. Consequently, causes foot ulcers. Bleeding wounds, calluses and corns may occur (Fig. 1). All the people having DM are at a risk of developing diabetic foot ulcers. The diabetic foot is an infection causing ulceration or destruction of deep tissues which are associated with neurologic abnormality in lower limb. Around 40 to 60% of all the lower limb amputations are due to DM.

Foot ulceration is among the most costly and serious complication of DM. A foot ulcer can lead towards amputation of whole or a part of lower limb. If successful revascularization is done in diabetic subjects having ischemic foot ulcer, only then the rate of major amputation can be reduced (LoGerfo et al., 1992).

The effectiveness of peripheral and distal by-pass has been established but the effective role of PTA (percutaneous trans-luminal angioplasty) and the feasibility of infrapopliteal angioplasty still need to be elucidated (Wagdy et al., 2016). Some reports suggest that the outcome of limb salvage is not much favorable in diabetic patients as compared to non-diabetic subjects (Chiong and Evans-Molina, 2016). Several other studies report no significant differences in outcome (Spence et al., 1999). Reviews about diabetic foot care suggest that percutaneous trans-luminal angioplasty can only be used for proximal arteries and is scarcely considered feasible (Turan et al., 2015).

A consistent and standardized strategy is required for evaluating wounds and it will help in setting further

therapy guidelines. Ulcers can be classified as ischemic, neuropathic or neuro-ischemic. Neuro-ischemic and ischemic ulcers are commonly present on the tips of toes and the lateral border of the foot. Neuropathic ulcers are frequent on the plantar of the foot and on areas overlying abony deformity. Depth of any ulcer is difficult to determine because of the presence of necrosis or overlying callus. Therefore, the neuropathic ulcers with necrosis and callus must be dried immediately. This debridement need not to be done in neuro-ischemic and ischemic ulcers without signs of infection. Debridement can be performed without general anesthesia in case of neuropathic ulcers. Though the range of foot lesions vary in various regions of the world yet the pathways of ulceration are more probably identical in most of the patients.

Diabetic foot ulcers and lesions frequently occur due to two or more risk factors present together.

In most diabetic patients, peripheral neuropathy plays central role. Upto 50% of patients of type-II diabetes exhibits neuropathy and risk-feet (Dorresteijn et al., 2014).

Neuropathy causes insensitive and deformed foot with an abnormal walking pattern. In neuropathic patients, a minor trauma or injury caused by like walking barefoot, ill-fitting shoes or any acute injury can result in chronic ulcers. Limited joint mobility, foot deformities and loss of sensation can cause abnormal biochemical loading of the foot. Thus, callus (thickened skin) forms. This leads towards further enhancement of the abnormal loading and often subcutaneous hemorrhage. Irrespective of the primary cause, the patient continuously walks on the insensitive foot and it impairs subsequent healing.

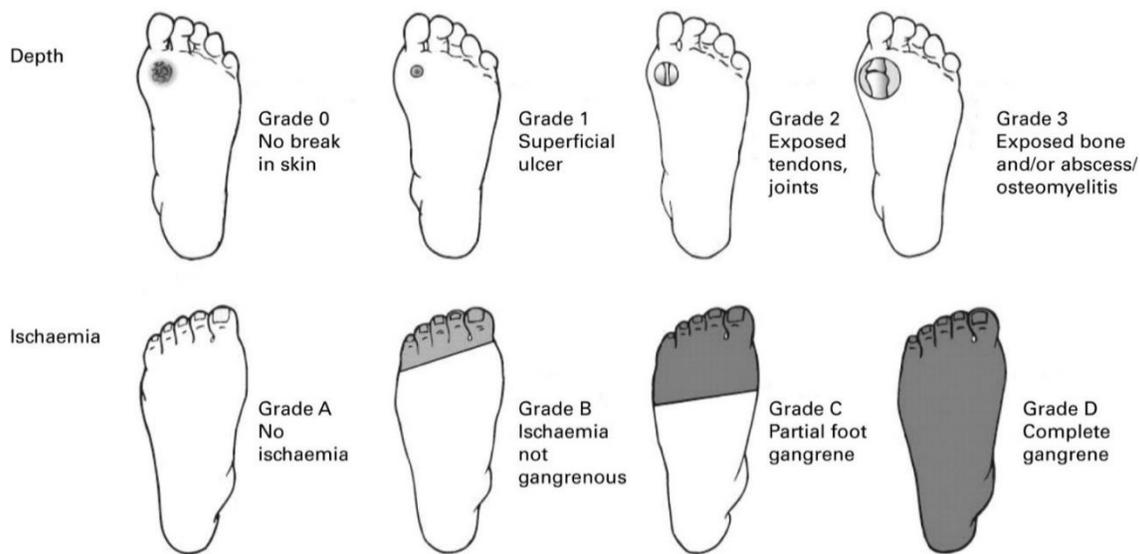


Figure 1: Diabetic feet showing different pathological conditions.

Peripheral vascular disease in conjunction with trivial traumatic injury can result in painful and ischemic foot ulceration. Despite severe peripheral ischemia, symptoms may be absent in patients having both neuropathy and ischemia. Micro-angioplasty must not be accepted as primary cause of ulceration (Neto et al., 2017).

Materials and Methods

A prospective, cross sectional study was conducted among the people of Karachi. a sample size of 100 participants was calculated. Karachietes were selected from different areas to check the level of diabetic foot among people of different age groups. convenience sampling was used to approach the participants. A self-administered questionnaire was used to collect the data from the participants.

The final version of the questionnaire was composed of 40 questions, which comprised of four sections including socio-demographic information, knowledge, attitude and perception about diabetic foot. all the people are invited to participate in the study.

Data were then collected and analyzed by using tabular arrangement on graph, we examined data about participants diabetic foot knowledge. the study protocol was approved by the ethical committee and the Basr department of Jinnah university for women. We evaluated the knowledge and information about the diabetic foot among the young generation of Pakistan.

Results

Table 1 Shows the practice of socio demographic data in which majority of young generations responds were of female (83.2%) as compared to male (16.8%), under the age groups of 18-30 (85.2%), 31-40 (2.8%), and 41-50 (7%), with married (18.3%) and unmarried (81.7%) marital status. The responses were predominant from urban side (100%) as compared to rural side (0.00%). With the Qualification of Diploma (3%), Bachelors (82%), Masters (5.5%) and Doctorates (9.5%).

Table 1: Socio demographic data

Sr. No.	Demographic Factor	Categories	Percentage of Participants
1.	Age	18-30	85.2%
		31-40	2.8%
		41-50	7%
2.	Gender	Male	16.8%
		Female	83.2%
3.	Marital Status	Single	81.7%
		Married	18.3%
4.	Residence	Rural	0.00%
		Urban/Semi Urban	100%
6.	Qualification	Diploma	3%
		Bachelors	82%
		Masters	5.5%
		Doctorate	9.5%

Student's knowledge about diabetic foot was carefully evaluated in terms of basic knowledge. Although other people with different fields show their keen interest in this survey as diabetes and diabetic foot is the main and common problem in Pakistan through long time ago. We took 100 samples of survey forms for this purpose. All the statements are clearly illustrated in table b part A, B, C.

Evaluating the knowledge of participants on diabetic foot from the basic statements, responders for the statement "do you think diabetic foot is an inherited disease?" responds highest percentage for "agree" that is 66% while "the cause of diabetic foot is diabetes?" Responds with the highest percentage of "agree" that is 88%. Responders for the statement "or it is the bacterial or viral infection?" Responds highest percentage "agree" that is 58%. Responders for the statement, "does diabetes induce other disease too?" responds a high percentage for "agree" that is 94%. Responders for the statement "do other diabetic induces diseases include hypertension, UTI infections etc.?" Responds a high percentage for "agree" that is 82%. Responders for the statement "do you think diabetic foot is a chronic disease?" Responds a high percentage for "agree" that is 86%. Responder for the statement "symptoms of diabetic foot include dry and itchy skin, tingling or loss of feel in foot etc.?" respond a highest percentage of agree that is 90%. Responders for the statement "do you think weakness in leg is the most common visible sign of diabetic foot?" Responds a high percentage for "agree" that is 85%. Responders for the statement "do patients of diabetic foot lose the strength in their limbs they become weak?" responds a high percentage for "agree" that is 82%. Responders for the statement "do obesity, pregnancy, age factor etc. these all are the risk factors that leads to diabetes?" Responds a high percentage for "agree" that is 90%. Responders for the statement "are diabetes or diabetic foot sexually transmitted disease?" Responds a high percentage for "disagree" that is 92%. Responders for the statement "diabetic foot majorly affects male?" Responds a high percentage for "disagree" that is 62%. Responders for the statement "or it mainly affects female?" Responds a high percentage for "disagree" that is 64%. Responders for the statement "does diabetic foot be treated?" Responds a high percentage for "agree" that is 86%.

Evaluating the knowledge of participants on diabetic foot from the basic statements, Responders for the statement "do you share your equipment's with diabetic patient?" responds highest percentage for "agree" that is 50% responders for the statement "do you think there is no harm in meeting person with diabetes or diabetic foot?" responds highest percentage for the "agree" that is 88%. Responders for the statement, "diabetic medicines should be stored properly to be effective?" Responds a high percentage

Table 2 (Part A) knowledge

Sr. No.	Questions	Agree %	Disagree %	Don't know %
1.	Do you think diabetic foot is an inherited disease?	66%	34%	-
2.	Diabetic foot is caused by diabetes?	88%	8%	4%
3.	Or it is the bacterial or viral infection?	40%	56%	4%
4.	Does diabetes induce other disease too?	94%	2%	4%
5.	Do other diabetic induces diseases include hypertension, UTI infections etc.?	82%	18%	-
6.	Do you think diabetic foot is a chronic disease?	82%	16%	2%
7.	Symptoms of diabetic foot include dry and itchy skin, tingling or loss of feel in foot etc.?	90%	10%	-
8.	Do you think weakness in leg is the most common visible sign of diabetic foot?	84%	14%	2%
9.	Do patients of diabetic foot lose the strength in their limbs they become weak?	82%	18%	-
10.	Do obesity, pregnancy, age factor etc. these all are the risk factors that leads to diabetes?	90%	10%	-
11.	Are diabetes or diabetic foot sexually transmitted disease?	8%	92%	-
12.	Diabetic foot majorly affects male?	96%	62%	2%
13.	Or it mainly affects female?	34%	64%	-
14.	Does diabetic foot be treated?	86%	12%	2%

Table 2 (Part B) attitude

Sr. No.	Questions	Agree %	Disagree %	Don't know %
1.	Do you share your equipment's with diabetic patient?	50%	48%	2%
2.	Do you think there is no harm in meeting person with diabetes or diabetic foot?	88%	12%	-
3.	Diabetic medicines should be stored properly to be effective?	94%	6%	-
4.	Diabetic foot medicines have some sterility issues?	68%	32%	-
5.	Do you feel fear of becoming infected with diabetic foot if you must take care any of its patient because it is contagious?	44%	56%	-

Table 2 (Part C) awareness

Sr. No.	Questions	Agree %	Disagree %	Don't know %
1.	Diabetes is the cause of diabetic foot mainly?	88%	12%	-
2.	Diabetic foot is contagious?	51%	48%	2%
3.	Does other causes that leads to diabetic foot include inflammation, foot injury etc.?	84%	16%	-
4.	Do you think that diabetic foot can be prevented by wearing appropriate shoes, control sugar level etc.?	80%	20%	-
5.	Is diabetic foot means paralysis?	14%	86%	-
6.	Sepsis is common in diabetic foot?	82%	18%	-
7.	Vaccinations are available for diabetes?	38%	62%	-

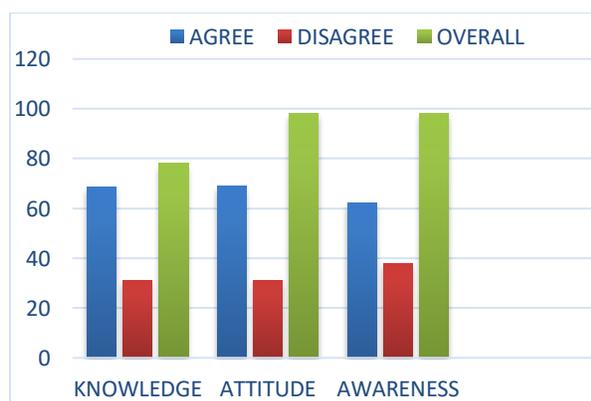


Figure 2: Diabetic Foot Associated Complications in Karachi

for “agree” that is 94% responders for the statement “diabetic foot medicines have some sterility issues?”

Responds a high percentage for the “agree” that is 68% (Fig. 2). Responders for the statement “do you feel fear of becoming infected with diabetic foot if you have to take care any of its patient because it is contagious?” Responds a high percentage for “disagree” that is 56%.

Evaluating the knowledge of participants on diabetic foot from the basic statements. Responders for the statement “diabetes is the cause of diabetic foot mainly?” “responds highest percentage for “agree” that is 88%. Responders for the statement “diabetic foot is contagious?” “responds highest percentage for the “agree” that is 51%. Responders for the statement, “does other causes that leads to diabetic foot include inflammation, foot injury etc.?” “Responds a high percentage for “agree” that is 84% responders for the statement “do you think that diabetic foot can be prevented by wearing appropriate shoes, control sugar level etc.?” Responds a high percentage for the “agree” that is 80%. Responders for the statement “is diabetic foot means

paralysis?" Responds a high percentage for "disagree" that is 86%. Responders for the statement "sepsis is common in diabetic foot?" "responds highest percentage for "agree" that is 82%. Responders for the statement "vaccinations are available for diabetes?" "responds a high percentage for "disagree" that is 62%.

Discussion

Diabetes mellitus (DM) is a lifelong disorder that accounts to high blood sugar level of a person. The two main types of DM are Type-I DM and Type-II DM. In type-I body's immune system attack on cells that produce insulin and destroys those cells. In type-II, the body can not produce enough insulin as required for proper functioning and/or body cells do not react to insulin properly. Type-II DM is far more common than Type-I DM (Tao et al., 2015). In KARACHI, about 90% of all the adult patients with diabetes have type-II DM. The third type of DM is gestational diabetes. In this type the pregnant women have such higher level of blood sugar/glucose that their body cannot produce enough insulin to absorb it all. Many people may have high blood sugar levels but not high enough to be diagnosed as having DM. This is known as pre-diabetes. If blood sugar level is higher than the normal range, then there is an increased risk of developing DM. It is important to diagnose DM as early as possible because it can progress to worse conditions if left untreated for a while. Symptoms are; increased urination at night, increased hunger and increased thirst, feeling very tired, loss of muscle bulk, weight loss, frequent episodes of thrush, blurred vision, itching around the vagina or penis and cuts or wounds that heal slowly (Shera et al., 2008). Per our survey in Karachi only 66% agree that diabetes is inherited disease which is not the case as it may originate from improper diet too. Diabetes is the only cause of diabetic foot but only 91% have knowledge about it. It is cause by gram positive bacteria such as (staphylococcus aureus) but only 40% knows about this fact. Diabetes induce others diseases too which include UTI infections, hypertension and 97% have knowledge about this in Karachi. Diabetic foot may associate with long term or chronic diabetes and 86% know this fact. Diabetic foot symptoms may include itchy skin, tingling or loss of feel in foot because of high blood sugar level. 90% of karachietes that suffer from this disease go through these symptoms. Some diabetic foot patient loss the strength in their limbs because may be due to bone fracture or pain or swelling. 82% people have knowledge about this. Pregnancy, obesity and age factor are the major risk factors for this disease, 90% agree with this fact. 92% knows the fact that it is not a sexually transmitted disease and mark their answers as disagree correctly. Diabetic foot is common in male as

compared to female per our survey. It may have treated by saline dressing to provide moist wound environment, debridement when necessary and antibiotic treatment and thankfully 87% have knowledge about it. Attitude related questions show some misconception regarding diabetic foot 48% thinks that they should not share their equipments with diabetic patient. 12% thinks that there is harm in meeting with diabetic foot's patient. 94% thinks that the medicines of diabetes should be stored properly for more effective results. 68% people thinks that these medicines have sterility issues. 44% people have fear that they may affected with diabetic foot as it is contagious per 51% people's thought. Awareness related questions shows the result that 84% people think that inflammation and foot injury leads to diabetic foot and sepsis is common in diabetic foot. 14% people have misconception that diabetic foot means paralysis which is not the case. 38% have misconception that vaccines are available for diabetes or diabetic foot can be prevented by vaccines. So, we just addressed people with correct answers and provided them better knowledge. Regular surveillance is warranted along with collaborative efforts to improve understanding, management and prevention of this disorder.

Conclusion: The research and studies regarding diabetic foot shows that it is a serious health issue. As the survey states that only 98% of the population are aware of diabetic foot. It is widespread disease which is caused by diabetes or some bacteria, leads to major damage in the limbs. The majority rate of diabetic foot is quite high in males. People should wear appropriate shoes and control their sugar level to be prevented from this disease. Possible diagnostic tool are blood sugar related tests. Awareness campaigns should be held so that more and more people become aware of such chronic infection.

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