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DIABETIC PATIENTS' AWARENESS REGARDING FOOT CARE AND ITS ASSOCIATED FACTORS IN QASSIM REGION SAUDI ARABIA

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Abstract: **Diabetes mellitus is a highly complex disease with one of its greatest common complications being foot ulceration. Poor knowledge, attitude, and practices in foot care are important risk factors in people with diabetes for foot problems. Aim: The main aim of the study is to assess diabetic patient awareness regarding foot care and its associated factors in Qassim region, Saudi Arabia. Method: This study was carried out in outpatient clinics at Abdullah Sulaiman Al Bassam Center for Diabetes in Onaizah, Diabetes and Endocrine Center in Buraidah, Security Forces Center in Buraidah and General hospital in Al Badayea, Qassim on 500 patients who have type 2 diabetes. Data collection tool used in this study were socio-demographic data, health status data, and KAP questionnaire on diabetic foot care. Results: Around 64% of the patients were unsatisfactory knowledge level. Also, more than half of them (56.6%) have inadequate practice. In addition, 53.2 % of them have negative attitude in total score. While, age, gender, social status, educational level, job, duration of illness was statistically insignificant relation between knowledge, practice and attitude of diabetic patients. There was positive significant correlation between knowledge and practice (p = 0.039). Additionally, it was found highly strong positive significant correlation between knowledge and attitude p =0.000. Conclusion: Patients had unsatisfactory knowledge on diabetic foot care. Also, their practices were inadequate. However, negative attitude on diabetic foot care. In addition to, insignificant relation between patient awareness and associated factors. Recommendation: Our study recommended that awareness programs should be implemented with diabetes foot education classes and adequate scientific information should be available through electronic social media, brochures and magazines.**

Keywords: **Diabetes mellitus, patient awareness, Foot care, associated factor.**

1. INTRODUCTION

Non-communicable diseases like diabetes mellitus, obesity, and hypertension, etc. are becoming the main health problems still in the world. One of the main obstacles confronted by the world is diabetes mellitus which significant mortality and morbidity. The frequency of diabetes mellitus (DM) is rapidly increasing worldwide both in developed and developing countries. On the other hand, this trend is rapid more in developing countries primarily due to, sedentary lifestyle, aging, obesity and an unhealthy diet. DM is a kind of metabolic diseases described by chronic great blood glucose levels, due to lack in insulin excretion, insulin action or both **(WHO, 2016).**

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The main types of diabetes are; diabetes type 1, diabetes type 2 and gestational diabetes, and the fewer common kinds of diabetes are secondary diabetes and monogenic diabetes **(International Diabetes Federation (IDF), 2017)**. DM is the fourth amongst the leading reasons of global deceases due to problems (Sami et al., 2017). According to the International Diabetes Federation (IDF), about 425 million persons worldwide hurt from diabetes.1 1.6 million deceases per year are attributed directly to it (Mehmood et al., 2019). Gulf Arabian countries are considered as increasing and high diabetes prevalence. In Saudi Arabia, the prevalence of type II DM was 25% (Abuyassin, & Laher, 2016). New research in Saudi Arabia recommended that more than 44% of persons aged equal 55 or more had severe to uncontrolled diabetes with longstanding complications **(Alsenany and Al Saif , 2015).**

Diabetic foot consequences in significant mortality and morbidity in developing countries and the occurrence of diabetes is predicted to further increase in the subsequent decades in these countries. Diabetic injuries are the maximum mutual foot injuries leading to lower extremity amputation. Literature has discovered a diabetic foot growth rate of 2.5% in patients of diabetes mellitus every year and 15% of them grow diabetic foot throughout their life (Nasir et al.,2019). A significant reason for this attitude is that patients are not given instruction in foot care and hence remain unaware of the negative effects of neglect. Preventative health measures can reduce the burden of foot problems in patients with diabetes. When patients have sufficient knowledge they can practice to avoid diabetic foot problem (**Mustafa et al., 2017).**

Diabetic foot is one of the main complications of high socioeconomic impact Diabetes Mellitus, characterized in most cases by foot lesions and ultimately leg amputation. Training on foot care is the most important method for avoiding amputation of the lower legs. Therefore, low cost, low technology assessment, and proactive processes are necessary to significantly reduce risk levels (Hasnain etal., 2009). The patient plays an important role in preventing diabetic foot injury and as such educating about foot care is necessary. Patients are much more likely to adhere to a drug regimen once they have sufficient knowledge of their health condition Mustafa et al., 2017. So, patient instruction regarding nail care, foot hygiene, and appropriate footwear are vital to decreasing the risk of damage that can principal to ulcer formation **(Nongmaithem et al., 2016)**. This study was implemented to determine the awareness regarding foot care and the factors affecting it.

Significance of the study

Diabetes mellitus is a major clinical and public health concern that is emerging. It is also the major cause of vision loss and amputations of lower extremities that could have been prevented by adequate care. As far as mortality is concerned, adults with diabetes have cardiovascular disease attack and mortality rates that are around 2 to 4 times greater than adults without diabetes (**EL-KHAWAGA and ABDEL-WAHAB, 2015)**. According to the World Health Organization (WHO), Saudi Arabia is ranked second highest in the Middle East and seventh in the worldwide for diabetes. Around 7 million of the population is estimated to be diabetic and about 3 million people have pre-diabetes. Perhaps even more troubling is the rising diabetes trend noted in Saudi Arabia in the past few years **(Abdulaziz Al Dawishet al., 2016)**. Inadequate knowledge, practice and attitude with diabetes remains a significant issue affecting health care providers in all environments and demographics. It has been noted, based on previous studies, that insufficient performance poses a threat to satisfactory outcome. This emphasized the impact of good results on the patient's morbidity and mortality, and increased the cost of medical treatment as medication costs, laboratory test costs, and care providers ' time and effort costs, in addition to disappointment for both patients and care providers.

Aim of study

The aim of this study was to assess diabetic patient awareness regarding foot care and its associated factors through answering:

Research questions:

Do patients have satisfactory knowledge regarding foot care?

Do patients have adequate practice regarding foot care?

Do patients have positive attitude regarding foot care?

Is there a relation between associated factor with patients' knowledge, practice, and attitude regarding foot care?

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2. SUBJECTS AND METHODS

Study design and setting: Across sectional descriptive research implemented from November to December 2019 and carried out at the outpatient clinics for diabetes at Abdullah Sulaiman Al Bassam Center for Diabetes in Onaizah, Diabetes and Endocrine Center in Buraidah, Security Forces Center in Buraidah and General hospital in Al Badayea, Qassim.

Subjects: A total of five hundred purposive sample of the diabetic patients were included and the data was collected from November to December 2019.

Tools of Data Collection

The tool divided to three main parts:

Part I: Socio-demographic data: as age, gender, level of education, job, number of family members, household income and marital status.

Part II: Health status data such as health problems (Heart disease**,** hypertension, hypotension, other**)** smoking**,** duration since diagnosed with diabetes.

Part III: KAP questionnaire regarding foot care

This tool adopted from (KAP questionnaire, 2017) and translated for Arabic language to assess patients' knowledge, practice, and attitude regarding diabetic foot care. It consists of 41 questions which are divided into knowledge (12 questions), practice (20 questions), and attitude (9 questions) regarding foot care. A scoring system was used as follows: for KAP (41 items), a score of "1" for the yes answer and "0" for the no answer or "don't know the answer." The total knowledge score ranged from 0 to 12 and was categorized into satisfactory and unsatisfactory knowledge. Also the total practice score ranged from 0 to 20 and was categorized into adequate and inadequate practice. While, the total attitude score ranged from 0 to 9 and was categorized into positive and negative attitude. While those who obtained score <60% were considered having unsatisfactory patient in knowledge and satisfactory score of ≥60%. Also the same in the practice and attitude.

Pilot study

It done on a sample of 10 % of patients in order to test the clarity, feasibility, reliability of the tools and to estimate the time needed for data collection. Patients excluded from studied sample.

Content Validity

It will be ascertained by jury of 9 expertise's from medical surgical nursing department at the nursing college and medical staff who will review the tools for clarity, relevance, comprehensiveness, understandable and applicable.

Reliability of tools

Reliability test were done whereas Cronbach's Alpha equal 0.702 for practice, attitude and knowledge. Patients were informed that they were given access to withhold participation and withdraw at any time. Data confidentiality has been enforced.

Statistical Analysis

Data entry and analysis were done using the Statistical Package for Social Science (SPSS) version 20. Data were presented in the tables and charts using actual numbers and percentages. Appropriate statistical methods were applied (Anova test (F), and correlation coefficient (r). Regarding P value, it was considered that: non-significant (NS) if P> 0.05, Significant (S) if P < 0.05, Highly Significant (HS) if P < 0.01.

Field work: After permission of hospitals directors to conduct the study. The researchers collected the data from patients in the above mentioned settings. Average time for patients' tool was 15 -20 minutes for each patient and data collection took place two days per week in the morning.

Ethical Consideration

Before the research started, the research was approved by the Regional Research Ethics Committee (RREC) Qassim Region, KSA. The research purpose was explained to the patients. Each had received informed consent.

3. RESULTS

We enrolled a total of 500 diabetic patients to the study, less than half (33.2%) diabetic patients their age were more than 60 years. Also more than half (60%) of them were females, two third (75.8%) were married, and third of them (35.4%) had a university education. While, the majority of them (73.0%) had working. Concerning the number of family members were more than half (62.6%) had 6 -10 members. Regarding the household income less than half of them (41.2%) had income from 5,000 to 10,000 SR. The characteristics of the diabetic patients are revealed in table 1.

As showed from table (2), more than one third of the studied patients (37.6%) had hypertension. also, the most of them 88.2 % were smoker. Concerning duration of illness, it is evident that less than half of them (47.8%) had been suffering from the illness for more than 10 years.

According to table (3), two hundred and sixty-five patients 43.2 % don't know that DM would contribute to reduced blood flow to their feet, increase gangrene 346 (69.2%), (60%) developing foot ulcers and smoking can reduce blood flow in their feet. Of the 248 patients who clipped their toenails, 49.6% % did not know trimmed their nails along the edge and 66% trimmed nail straight, 45.8% smoking predispose to low blood flow to their feet. In addition to, 76.8 % of patients said that foot infection will develop foot wounds, while 66% of the diabetic patients lead to loss of sensation on their foot and more predisposed to have foot ulcers.

Table 4. shows patients attitude in different aspects of diabetic foot care, it is interesting to note that most patients have good attitude regarding nutritional measures are significant in adjusting DM, do exercise to prevent diabetes complications (60.6%), taking drugs (91.2 %), take appropriate measures for diabetes 89.6%. While bad attitude regarding footwear indoors as advised by their podiatrist (72.8%), don't have redness or bleeding between their toes (79.6%). 57.2% don't wear a medical special shoes for diabetics, 52.4% don't check sole for foot daily.

Table 5. Shows that the most of the studied patient's 481 (96.2) % washed their feet daily, 77.8% checked water temperature before use, 76.4% of patients change their socks daily. While, 71.8% of patients will consult a podiatrist when damage in their feet, 72.8% change shoes more than once a year. While, most of patients did not cut their nails daily, did not change their shoes a year, did not check up their feet a month (83.2, 77% and 83% respectively).

Figure 1 shows that the mean score of knowledge 6.39, attitude 5.46, and practice 11.81. In addition, practice mean score of patient was higher than the score of knowledge and attitude Figure (5) Indicates that nearly two third 64% of the patients have unsatisfactory knowledge level. Also, more than half of them (56.6%) have inadequate practice. In addition, the table shows that 53.2 % of them have negative attitude in total score.

Table 6. illustrates that low mean score in knowledge in age group 50 -59 y, male, divorced, read and write, working, and duration of illness from 5 to 10 years. Regarding relation practice mean score were low in age group 40 - 49 y, female, Divorced, Intermediate education, Working, and duration of illness Less than 5 years. While, age group 40 - 49 y, female, divorced, university education, not working, and duration of illness from 5 to 10 years for diabetic patient have low mean score in attitude. Also no significant relation between all associated factors, knowledge, practice and attitude of diabetic patient.

As table 7. Shows, a positive significant correlation between knowledge and practice ($p = 0.039$) is detected. In addition to, highly strong positive significant correlation between knowledge and attitude $p = 0.000$

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Table 1: Characteristics of participated d Diabetic Patients (n=500)

Variables		Frequency	%
Age	20 – 29 y	42	8.4
	30 -39 y	32	6.4
	40 -49 y	112	22.4
	50 -59 y	166	33.2
	more than 60	148	29.6
Gender	Male	175	35.0
	Female	325	65.0
Marital Status	Single	48	9.6
	Married	379	75.8
	Divorced	12	2.4
	Widowed	61	12.2
Educational level	Illiterate	109	21.8
	Read and write	75	15.0
	Elementary	60	12.0
	Intermediate	79	15.8
	University	177	35.4
Job	Working	365	73.0
	Not working	135	27.0
Number of family members	≤ 5	125	25.6
	6- 10	313	62.6
	More than10	62	12.7
Household income	Less than 5,000 SR	118	23.6
	from 5,000 to 10,000 SR	206	41.2
	more than 10,000 SR	176	35.2

Table 2: Health status of Diabetic Patients (n=500)

Health status data			
Variables		Frequency	%
1- Health problems	Heart disease	83	16.6
	hypertension	188	37.6
	Cholesterol	25	5.0
	Thyroid Disease	12	2.4
	Anemia	2	.2
	Kidney Disease	30	6.4
	None	197	39.4
2-Smoking	Smoker	34	6.8
	Former smoker	25	5.0
	Non-smoker	441	88.2
3- Duration of illness	Less than 5 years	124	24.8
	from 5 to 10 years	137	27.4
	more than 10 years	239	47.8

Table 3: Distribution of patients Knowledge regarding diabetic foot care (n=500)

Knowledge Assessment						
	YES		NO		I don't know	
	No	%	No	%	No	%
1. Is it true that all patients with diabetes develop reduced blood flow in their feet?	131	26.2	153	30.6	216	43.2
2. Is it true that all patients with diabetes develop lack of sensations in their feet?	136	27.2	265	53.0	99	19.8
3. Is it true that all patients with diabetes develop foot ulcers?	126	25.2	300	60.0	74	14.8
4. Is it true that all patients with diabetes develop gangrene?	92	18.4	346	69.2	62	12.4
5. Have you been to give you any information on foot care?	289	57.8	182	36.4	29	5.8
6. Are you aware that smoking can reduce blood flow in your feet?	246	49.2	35	7.0	219	43.8
7. Is the smoking can reduce blood flow to your feet?	230	46.0	41	8.2	229	45.8
8. Do you know that if you have reduced blood flow on your foot, you are more prone to get foot ulcers?	283	56.6	36	7.2	181	36.2
9. Do you know that if you have loss of sensation on your foot, you are more prone to have foot ulcers?	330	66.0	43	8.6	127	25.4
10. Do you know that if you have foot infection, you will develop foot wounds?	384	76.8	39	7.8	77	15.4
11. Do you trim your nail along the edges?	238	47.6	248	49.6	14	2.8
12. Do you trime your nail straight through?	272	54.4	211	42.2	17	3.4

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Table 4: Distribution of patient's attitude regarding diabetic foot care (n=500)

Practice Assessment	YES		NO		I don't know	
	No	%	No	%	No	%
1-Do you wash your feet daily?	481	96.2	19	3.8	0	0
2-Did you examine the water temperature before you use it?	389	77.8	110	22.0	1	.2
3-Do you wash your feet in water with medium heat?	436	87.2	58	11.6	6	1.2
4-Do you dry your feet after washing?	285	57.0	209	41.8	6	1.2
5-Do you Heated your feet in front of the fire or fireplace?	252	50.4	240	48.0	8	1.6
6-Do you moisturize dry areas of your feet daily?	311	62.2	182	36.4	7	1.4
7-Did you change your socks daily?	382	76.4	111	22.2	7	1.4
8-Do you verification of the existence of any objects inside the shoe before wear it?	359	71.8	134	26.8	7	1.4
9-Do you check your feet daily for any injury?	306	61.2	187	37.4	7	1.4
10-If you find damage in your feet will you manage yourself?	378	75.6	117	23.4	5	1.0
11-If you find damage in your feet will you consult a podiatrist?	359	71.8	133	26.6	8	1.6
12-Do you cut your nails daily?	73	14.6	416	83.2	11	2.2
13-Do you check whether your shoes/socks leave marks on your feet?	286	57.2	205	41.0	9	1.8
14-Did you change your shoes only when are damage?	236	47.2	259	51.8	5	1.0
15-Did you change your shoes only once a year?	111	22.2	385	77.0	4	.8
16-Did you change your shoes more than once a year?	364	72.8	132	26.4	4	.8
17-Do you go to check up the foot once in a month?	72	14.4	419	83.8	9	1.8
18-Do you go to check up the foot once every 6 months?	115	23.0	373	74.6	12	2.4
19-Do you go to check up the foot just once a year?	73	14.6	415	83.0	12	2.4
20-Do you go to check up the foot only during illness?	338	67.6	155	31.0	7	1.4

Table 5: Distribution of patients practice regarding diabetic foot care (n=500)

Attitude Assessment	YES		NO		I don't know	
	No	%	No	%	No	%
1-Diet is important in the control of DM	423	84.6	62	12.4	15	3.0
2-Are you willing to do exercising regularly to prevent further complications of diabetes?	303	60.6	165	33.0	32	6.4
3-Are you taking drugs to prevent diabetes complications?	456	91.2	40	8.0	4	.8
4-Are the people with diabetes should checking sole of foot daily?	238	47.6	172	34.4	90	18.0
5-Do you wear a medical special shoes for diabetics?	208	41.6	286	57.2	6	1.2
6-Will you wear footwear indoors as advised by your podiatrist?	129	25.8	364	72.8	7	1.4
7-Did you see redness or bleeding between your toes?	90	18.0	398	79.6	12	2.4
8-Do you feel warm or cold feet without any reason?	319	63.8	167	33.4	14	2.8
9-Do you think you can lead a normal life if you take appropriate measures for diabetes?	448	89.6	36	7.2	16	3.2

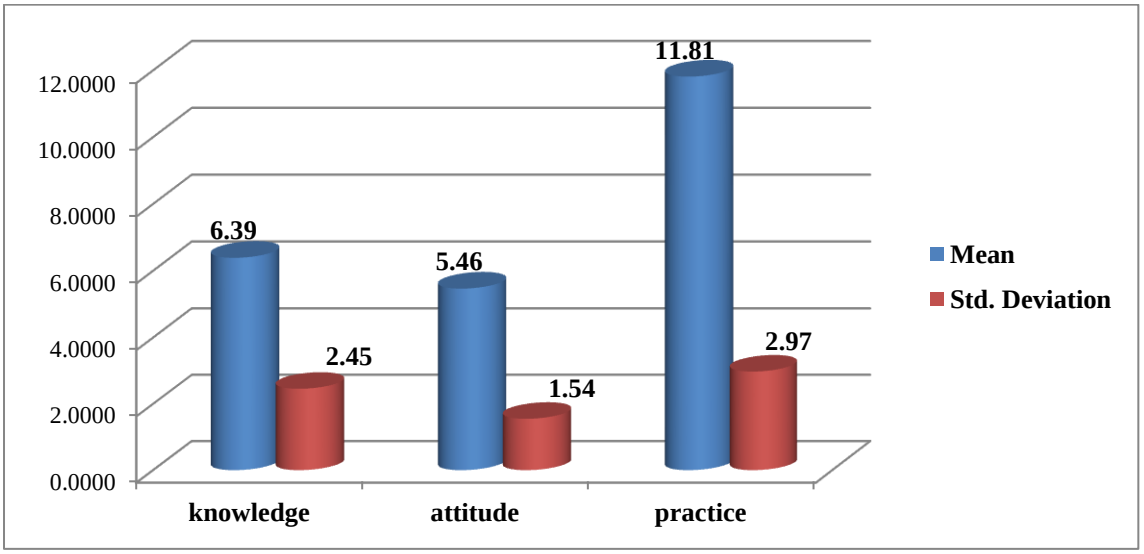

Figure 1: Mean total and SD of Knowledge, practice and attitude

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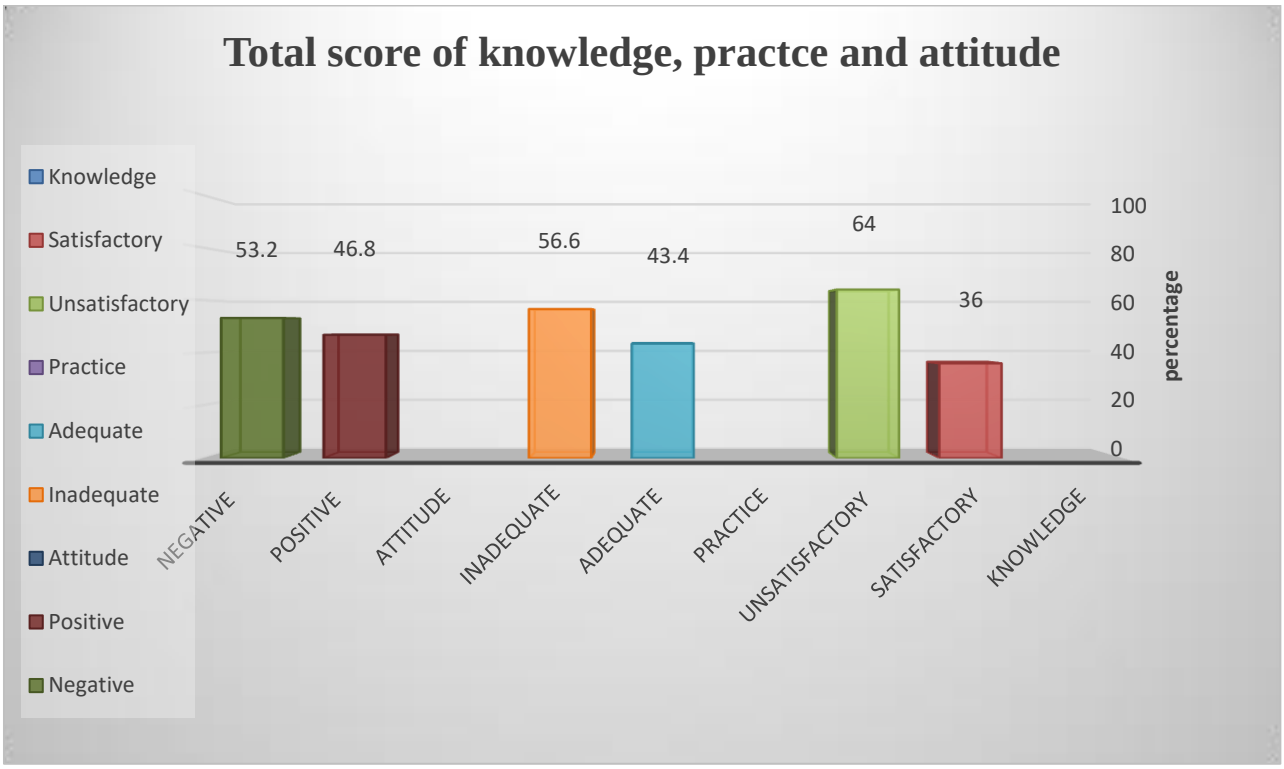

Figure 2: Knowledge, practice and attitude score regarding diabetic foot (n=500)

Table 6: Relation between associated factor, Knowledge, practice and attitude regarding diabetic foot care

Items	knowledge			Practice			Attitude		
	Mean &SD	F	sig	Mean &SD	F	sig	Mean &SD	F	sig
Age									
20 – 29 y	21.92±3.84	3.71	0.005	30.33±3.44	2.77	0.027	13.04±1.95	1.29	0.273
30 -39 y	22.15±5.62			29.59±3.35			12.90±2.68		
40 -49 y	20.58±4.17			29.46±2.83			12.92±1.71		
50 -59 y	20.43±4.15			30.21±3.22			13.15±1.82		
more than 60	22.02±4.73			30.63±2.59			13.43±2.14		
Gender									
Male	20.80±4.36	1.83	0.177	30.28±3.20	0.628	0.428	13.35±1.99	2.50	0.114
female	21.37±4.51			30.06±2.90			13.06±1.96		
Social status									
Single	22.10±3.79	2.78	0.041	30.00±3.43	0.286	0.836	13.20±2.26	0.963	0.410
Married	20.98±4.56			30.11±3.00			13.21±1.95		
Divorced	18.91±2.99			29.83±3.32			12.33±1.82		
Widowed	22.06±4.39			30.44±2.72			12.98±1.90		
Educational level									
Illiterate	22.00±5.04	3.18	0.013	30.54±2.54	1.74	0.138	13.40±2.23	0.743	0.563
Read and write	19.96±4.09			30.61±3.61			13.01±1.99		
Elementary	20.30±3.64			29.79±3.01			13.08±1.70		
Intermediate	21.68±4.78			29.64±2.54			13.29±1.99		
University	21.22±4.23			30.01±3.01			13.05±1.88		
Job									
Working	21.08±4.42	0.068	0.794	30.03±3.50	0.068	0.794	13.17±2.05	0.230	0.632
Not working	21.20±4.49			30.18±2.82			13.15±1.94		
Duration of illness									
Less than 5 years	21.42±4.83	0.396	0.673	29.50±2.93	7.66	0.001	13.07±2.01	3.83	0.022
from 5 to 10 years	20.93±4.33			29.78±2.68			12.83±1.71		
more than 10 years	21.17±4.35			30.67±3.14			13.40±2.07		

Table 7: Correlation between scores of knowledge, practice and attitude regarding diabetic care foot

Items	Practice		Attitude	
	r	P	r	P
Knowledge	0.092*	0.039	0. 256**	0.000

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4. DISCUSSION

Diabetes mellitus (DM) is a serious public health problem that affects one in 11 adults (425 million worldwide cases) globally. Diabetic foot disease (DFD) is a main challenge for the healthcare system, with massive financial consequences for people living with diabetes, the society, and their families, hampering both quality of care and quality of life. Our study showed that 33.2% of patients were above 60 years old. This may be because type-2 DM patients are elder and no symptom which consequences reduced medical looking for behavior. The same was shown by (Seid et al., 2015), observed a majority of the participants in between 18 and 25 years old and were females. This might be because more women select for checkups in formal health settings as compared to men. In spite of the occurrence of type-2 DM, the occurrence between the sexes is unmatched worldwide. Further, it is possible that this difference in the prevalence is because non-diabetic men are usually more insulin resistant than women **(Murad et al., 2014).** This finding is in same line with (**Goie et al., 2016).** Other researchers disagree with (Mahon et al., 2016). Regarding health status of diabetic patient shows that more than one third of the studied patients (37.6%) had hypertension. This finding in the same line with (**Darshanet al., 2016**).

Our study showed that nearly half of patients are not aware that DM can contribute to reduced blood flow to their feet and smoking predisposes one for low blood flow to their feet. This result is consistent with **(Goie et al., 2016),** who found that half patients had no awareness about the consequences of the disease and smoking in terms of reduced blood flow to the extremities.

The findings of this study revealed that some patients had a poor attitude towards wearing footwear indoors as advised by their podiatrist (72.8%), check redness or bleeding between their toes (79.6%). A total of 57.2% do not wear special medical shoes meant for diabetics. Other studies on footwear use by diabetic patients are essential to determine if using certain materials in footwear is better for actually lowering the occurrence of ulceration in patients and 18% of diabetic patients don't check their shoes every day for any tear or wear **(Darshan et al., 2016).**

This study has shown that the majority of patients have unsatisfactory knowledge and inadequate foot care practice. This finding in the same line with **Ahmed et al., 2019** who performed a study in Sudan country and showed that little level of knowledge regarding diabetic foot care. Also, this finding in the same with **(Seid et al., 2015, Goie et al.,2016)** Displayed inadequate patient information for the most significant factors in all categories of diabetic foot problem, such as the occurrence of ulcer/foot infection, peripheral neuropathy and peripheral vascular problem. These insufficiencies rise from absence of information about the problems as result from diabetes such as reducing blood flow to feet, foot ulcers, gangrene, and absence knowledge how cutting nail along the edges, effect of smoking in triggering reduced foot circulation; requirement for expert consultation when threatening signs like bleeding/redness happens between toes; importance of consistent check of the footwear for torn lining or things and systematic examination of the feet. This result congruent with **(Desalu et al., 2011)** revealed that a larger percentage of patients had a reduced knowledge of foot care diabetic.

Concerning the mean score of practice was higher than the mean score of knowledge and attitude. This result is inconsistent with **(Desalu et al., 2011 &Hasnain and Sheikh, 2009**) which described the score of practice was always lesser than the score of knowledge. Regarding total practice score regarding diabetic foot illustrated that more than half of them (56.6%) have inadequate practice. this finding disagreement with **(Ahmed et al., 2019)**. illustrated that insufficiency practice level (20.7%). The information deficit may be due to poor contact between doctors and patients, as well as lack of advice from doctors and nurses due to busy clinic schedule. Patient awareness on foot ulceration prevention is therefore important and should be integrated into the routine care of diabetes patients both in hospital and in the community. At clinic sessions, time must be allocated for contact, information, and education **(Fletcher, 2006).** In this study, this inadequate practice of foot care is in line with other previous studies **(DESALU etal., 2011)**. This may be attributed to the unsatisfactory of knowledge among respondents as 64 percent of those. Concerning relation between associated factor (age, gender, social status, educational level, job, duration of illness), knowledge, practice and attitude regarding diabetic foot care. Revealed that no significant relation between all associated factors, knowledge, practice, and attitude of the diabetic patient regarding foot care.

While an important finding of this study was the no- association of the level of education in diabetic patients with the level of knowledge of foot care. Even though most patients with poor knowledge and practice were educated. The lack of

adequate promotion of diabetic knowledge within our population may explain this discrepancy. Inadequate information regarding diabetic foot care was received by both educated and less educated patients this result inconsistent with **DESALU et al (2011)** found that low education significantly had lesser knowledge of foot care while consistent with sex and age differences were not significantly associated with the Information of foot care. While **Ahmed et al., (2019)** described in China as being linked to poor foot self-care practices such as education, duration of diabetes mellitus, periodic inspection and diabetes complications education (**Li et.al, 2014**). It is worth noting that regular doctor feet exams will improve the good patient foot care **(Goie et al., 2016).** While congruent with (**Ahmed et al., 2019)** revealed an insignificant relation between sex and knowledge but disagreement with statistical significant relation between longer duration of illness more than 10 years and educational level.

This result is inconsistent with **(Magbanua and Lim-Alba, 2017)** who found that only 50 percent less likely to have good practice scores were respondents who had diabetes for more than 10 years. A study conducted in China, on the other hand, found that the state of practice was influenced by duration of diabetes mellitus and diabetic complications education. Other researchers Musa et al., 2018, illustrated that the advanced age is likely to be associated with a worse outcome due to a sluggish immune response to infection and other comorbidities that impair recovery, such as reduced blood flow. On the other hand, longer duration of diabetes is likely to be associated with more diabetic complications, such as micro- and macrovascular complications, which are likely to play a crucial role in skin breakdown and ulcer perpetuation.

This study revealed that age, gender, social status, educational level, job, duration of illness was insignificant relation between knowledge of diabetic foot care and also practice level. This result inconsistent with (Seid et al., 2015, Ahmed et al., 2019) exposed that educational status, age, duration of diabetic therapy, and marital status were connected with knowledge level regarding foot care. Our finding in the same line with Solanki et al. in 2017 for 200 patients with type 2 diabetes mellitus carried out a cross-sectional study who found that KAP score was uninfluenced by age, employment, and length of the disease. Regarding the correlation between scores of knowledge, practice, and attitude regarding diabetic care foot. A revealed positive significant correlation between knowledge and practice. Same results were reported by **Al-Maskari et al., 2012**. Also finding consistent with **(Mustafa et al., 2017**) stated that correct information (knowledge) would influence perceptions and thus change behavior. While, this study disagrees with **El-Khawaga, and Abdel-Wahab (2015)** who reported a significant negative correlation between the knowledge and practice of patients in UAE. In addition to, a highly strong positive significant correlation between knowledge and attitude. Similar finding was reported by **Al-Maskari et al., (2012) and El-Khawaga, and Abdel-Wahab (2015).**

5. CONCLUSION

In most diabetic patients the knowledge and practice and attitude of foot care were poor. There is no significant association between the demographics of patients with the different knowledge levels and practice of foot care.in order to reduce the occurrence of diabetic foot complications, educational programs based on knowledge of diabetic foot treatment will involve the community directly.

6. RECOMMENDATIONS

Diabetes patients should all be educated on complications of diabetic foot and footwear. Increasing diabetic foot awareness will certainly have a positive impact on reducing the amputation rate and patients should be given an annual foot exam to recognize high-risk foot conditions. It is essential for health professionals to be aware of the importance of providing footwear advice to all diabetic patients, besides foot care and education.

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Conflict of interest

The authors declared no conflicts of interest

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