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Epidemiological Features of Diabetic Foot among Diabetic Patients Attending Babylon Governorate Teaching Hospitals –Iraq

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Abstract

Diabetes mellitus disease was considered as a global epidemic, in Iraq the incidence rate was increasing. Diabetic foot is one of the common complications of diabetes in developing countries including our country , this health problem was associated with a serious social and financial impacts. To highlight the prevalence of diabetic foot ulcerations and amputations as well as the demographic characteristics of Iraqi patients with diabetic feet and the contributing factors.

This is a hospital based across sectional descriptive study conducted on a convenience sample of 92 diabetic patients. Data were collected using pre-structured questionnaire by authors that includes demographic data and information related to the main associated factors with diabetic foot, outcomes and self-care practices. Statistical Analysis was done using Social Sciences (SPSS) Software version 26.0 for windows. The findings of the current study showed that highest proportion of diabetic participants are above 40 years of age, with Females predominance. Currently, the high proportion of diabetic patients have low educational level. Majority of the diabetic patients in this study reported they had health education about diabetic foot care. The present study concluded that prevalence of diabetic foot ulcerations and imputation were high and more common among low educated females living in urban areas.

Key words : Diabetic Foot, Ulceration, Epidemiology.

Introduction

Diabetes mellitus is increasing worldwide and reached an epidemic status in Iraq during the last decade (Abuyassin and Laher ,2010). The main complications facing diabetic patients specially uncontrolled ones are foot lesions . These complications are serious, more common and have social and economic impact on patients, their families and the communities (ADA,2010; Gabish and Mohammad,2018; Dawood and Jupori ,2020). Diabetic foot ulcer associated with the coexistence of peripheral arteriopathy and neuropathy. In Iraq, type II diabetic patients have high prevalence of diabetic foot problems. The prevalence of diabetes mellitus in our country was 9.3% in

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2015 according to statistics published on International Diabetes Federation (Qadi and Al Zahrani ,2011) Any failure in treating and caring diabetes may lead to diabetic foot problems(Alwan and Alhusuny ,2017).

In Iraq, type II diabetic patients is a high public health problem(Alzahrani, et al.,2013). In term of morbidity, these problems are clinically present as complications with one or more of the following manifestations: foot infection, ulceration, neuropathy, deformity, gangrene and/or ischemia(Al Zahrani *et al*.,2018). While in term of cost, the diabetic foot represents 12-15% of the overall cost and up to 40% in developing countries including (Iraq Solan , *et al.*,2017). These complications increase the risk for amputation in diabetic patients by 12.3 folds as compared to the normal population(Muhammad-Lutfi et al.,2014; Dikeukwu , 2011). A preventive foot care practices can substantially reduce the risk of amputation in the lower extremities (Jinadasa and Jeewantha , 2011). Diabetic foot should be managed by a trained multidisciplinary team at any part in the world and the foot problems of diabetic patients can be improved by the good foot care practice(Begum et al.,2010). Several published articles reported that physician lack interest in managing their diabetic patients and the situation is more dramatic in developing countries like Iraq as a result to high prevalence of type 2 DM and alarmed foot ulceration (bu-Qamar and Wilson , 2011; Bani , 2015 ; El Din et al.,2016; Noaman *et al.*,2017). The early intervention such as Removable Walker Cast in the Healing of Diabetic foot is an effective method in the treatment of diabetic neuropathic foot ulceration by using this method of offloading (Piaggesi et al.,2007; Mohammad and Al-Asdy , 2020).

This study was done to highlight the prevalence of ulcerations and the percentage of amputations as well as demographic characteristics among Iraqi patients with diabetic feet with the main associated factors.

Methodology

This is a hospital based across sectional descriptive study conducted on a convenience sample of 92 diabetic patients diagnosed as diabetic foot patients who attended teaching hospitals outpatients clinics or admitted to these hospitals (Al Sadik teaching hospital , Al – Hilla Teaching Hospital and the Diabetic center in Merjan Medical City – Babylon Governorate – Iraq) . Data were collected from patients attending or admitted to these Babylon health care services centers using pre-structured questionnaire prepared by authors and adopted from previous studies, The questionnaire includes demographic data and information related to the main associated factors of diabetic foot, as well as the outcomes and self-care practices. Reviewing of patients records was done to complete the data required including the measurement of blood sugar and the clinical assessment of their feet.

Ethical approval was obtained from Hilla University College Ethical Committee and the informed consents were taken verbally from all participants enrolled in the current study after describing the objectives of this study . Statistical analysis was done using Statistical Package of Social Sciences (SPSS) Software version 26.0.

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Results

Table -1- Demographic characteristics of participants

Variable		**Frequency**	**Percentage**
Age Groups	45-59 years old	32	34.8%
	60-74 years old	39	42.4%
	75 years old and older	4	4.3%
	Less than 45 years old	17	18.5%
	Total	92	100.0%
Gender	Male	45	48.9%
	Female	47	51.1%
	Total	92	100.0%
Educational Status	Can't Read Nor Write	8	8.7%
	Can Read and Write	7	7.6%
	Primary School	42	45.7%
	Intermediate School	20	21.7%
	High School	6	6.5%
	Diploma	6	6.5%
	Bachelor and Above	3	3.3%
	Total	92	100.0%
Monthly Income	Enough	24	26.1%
	Enough to Some Extent	52	56.5%
	Not Enough	16	17.4%
	Total	92	100.0%
Residence	Rural	34	37.0%
	Urban	58	63.0%
	Total	92	100.0%
Marital Status	Single	5	5.5%
	Married	76	83.5%
	Divorced	3	3.3%
	Widowed	6	6.6%
	Separated	1	1.1%
	Total	91	100.0%
Occupation	Employee	13	14.1%
	Retired	17	18.5%

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	workers	23	25.0%
	Housewife	39	42.4%
	Total	92	100.0%
Age(year)	Mean Standard deviation	55 13	

In this study Patients' mean age was 55 ±13 , females are predominant(51.1%) , this table also shows a higher frequency of diabetic foot among older patients more than 60 years, who are married and living in urban areas with poor educational status are shown in Table 1 and figure 1

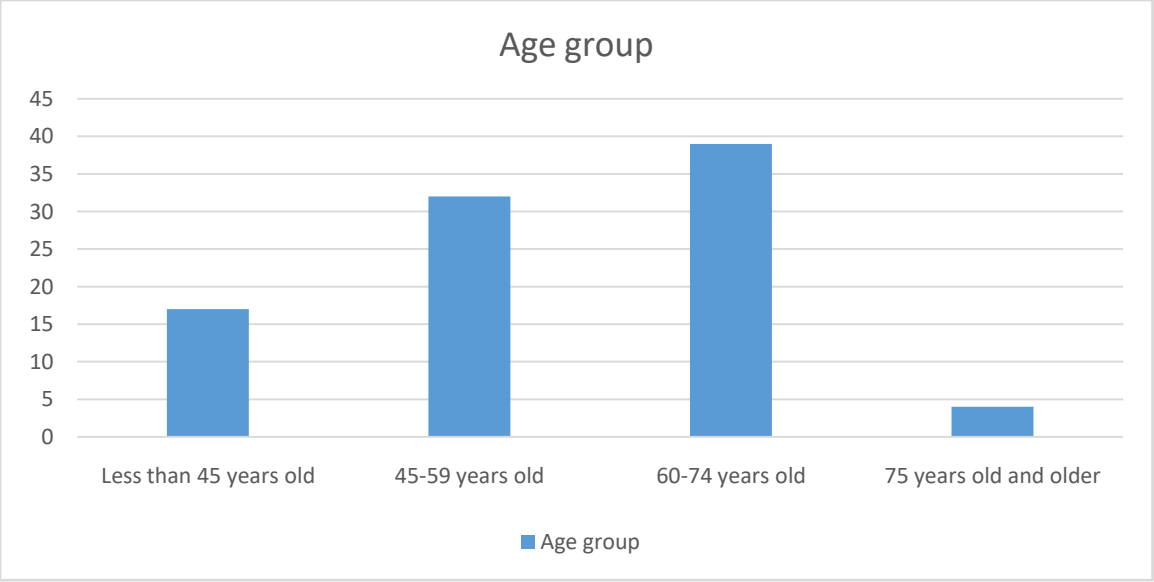

Figure 1: Age groups of participants

Table 2: Epidemiological features of participants

Variables		**frequency**	**Percentage**
Types of Treatment	Orally medication only	31	33.7%
	Insulin only	23	25.0%
	Diet	10	10.9%
	Mixed (insulin and oral hypoglycemic agent)	28	30.4%

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	Total	92	100.0%
Family history of diabetic foot	Present	41	44.6%
	Absent	51	55.4%
	Total	92	100.0%
Type of Diabetes Miletus	Diabetes mellitus type 1	31	34.4%
	Diabetes mellitus type 2	59	65.6%
	Total	90*	100.0%
Have you got any ulceration in your foot?	Yes	46	51.1%
	No	44	48.9%
	Total	90*	100.0%
Have you got foot amputation surgery?	Yes	8	8.7%
	No	84	91.3%
	Total	92	100.0%
Have you got Doppler test?	Yes	37	40.2%
	no	54	58.7%
	390	1	1.1%
	Total	92	100.0%
Most recent result of random blood glucose level?	Mean Standard deviation	268.10 116.109	

*Missed information from two patients

In this table (table-2-), we summarized the epidemiological features of patients with diabetes mellitus and have diabetic foot or its complications, the most common type of treatment for diabetes mellitus is oral medication followed by mixed (oral hypoglycemic medications plus insulin therapy), then insulin injections and diet, (33.7%, 30.4%, 25.0%, 10.9% respectively). 44.6% of participants have family history of diabetes foot. 65.6% of patients enrolled in this study have diabetes mellitus type 2 and most of them have a diabetic foot and ulceration in the foot, the majority of the sample do not need amputation surgery.

Table 3: distribution of participants according to tobacco smoking & alcohol consumption

Varaible		**Frequency**	**percentage**
Do you smoke tobacco?	yes	22	23.9%
	no	70	76.1%
Do you drink	yes	1	1.2%
	no	85	98.8%

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alcohol?			

Table-3- shows that the tobacco smoking rate and alcohol consumption habits , about one in four of patients are current tobacco smokers while the vast majority of them don't drink alcohol.

Table : -4 -Knowledge and practice of patients toward caring for diabetic foot

	Yes all times		**Sometimes**		**No**	
	Freq.	%	Freq.	%	Freq.	%
Do you check your feet regularly?	68	73.9%	19	20.7%	5	5.4%
Do you wash your feet by warm water regularly?	60	65.2%	25	27.2%	7	7.6%
Do you check the temperature of water before washing your feet?	67	72.8%	15	16.3%	10	10.9%
Do you trim your toenails regularly?	66	71.7%	16	17.4%	10	10.9%
Do you use a moisturizing cream for your feet?	38	41.3%	27	29.3%	27	29.3%
Do you avoid walking barefoot?	73	79.3%	15	16.3%	4	4.3%
Do you use a diabetic shoes or footwear?	37	40.2%	23	25.0%	32	34.8%
Do you check your shoes before wearing them?	44	47.8%	33	35.9%	15	16.3%
Are you keen to wear comfortable foot socks?	53	57.6%	34	37.0%	5	5.4%
Do you take your prescribed medication regularly?	75	81.5%	6	6.5%	11	12.0 %
Do you check your glucose level regularly?	62	67.4%	25	27.2%	5	5.4%
Do you visit a specialist doctor periodically?	48	52.2%	33	35.9%	11	12.0%

***Freq=Frequency, %=Percentage**

knowledge and practice of patients toward caring for diabetic foot among the study sample is shown in Table 5. Majority of patients enrolled in this study were performing good foot-care habits, including (washing by warm water, trimming toenails, adherence to treatment and avoiding walking barefoot .) Most of participant check their feet and temperature of water regularly when washing their feet. Low proportion of of patients use a moisturizing cream or diabetic shoes and not checking their shoes before wearing them on regular bases, also nearly half of participants in this study do not visit specialist doctor periodically

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Discussion

Females are predominant in this study this finding goes in line with the findings of other studies (Stacy ,2015) , but disagrees with findings of other studies that reveal diabetes mellitus was more common among male patients (Kesavadev *et al*.,2003;Shaikh *et al*.,2013; Gebrekirstos et al.,2013). The prevalence of foot ulceration among the study group is high (51%) this finding is much higher than that percentage reported by other study(Gebrekirstos *et al*.,2013;Andrew *et al*.,2020). The amputation rate is also much higher than that reported in diabetic foot patients in Romania and Eastern Europe (Andrew *et al*.,2020). Most participants were married and came from urban areas this findings are supported by the findings reported by other study (Gebrekirstos *et al*.,2013). The findings of the current study show that highest proportion of diabetic participants are above 40 years of age, this finding is similar to that reported by other researchers (Shaikh *et al*.,2013; Gebrekirstos et al.,2013). Currently, the higher proportions of diabetic patients have an educational level of intermediate school and below, this finding is similar to the findings reported by other Iraqi and regional studies (Piaggesi et al.,2007; Mohammad and Al-Asdy , 2020), but disagrees with the finding of other study conducted by Gebrekirstos K et al., in North Ethiopia who found that their diabetic foot patients had high level of education , the low educational level may lead to poor attitudes toward health education and to low level of risk awareness of diabetic foot self-care these may also contribute to bad lifestyle and un healthy dietary habits and less daily exercise among patients with diabetes mellitus. Thus, evaluation of the educational level of diabetic foot patients is helpful to use effective educational program to improve their self-management practice, These patients might benefit from certain prophylactic interventions, including patient education, prescription footwear, intensive podiatric care, and evaluation for surgical interventions(Singh *et al*.,2005).

Since more than half of our patients (according to the finding of this study) are not persistently using proper diabetic shoes Several published high-quality studies indi-cate that specific modalities of therapeutic footwear canbe effective in the prevention of a recurrent plantar foot ulcer compared with more standard of care therapeuticfootwear (Rizzo *et al*.,2012; Bus et al.,2013; Ulbrecht,2014)

The same proportion of our patients mentioned that they don't check their shoes before wearing them as well as they don't use the moisture cream to lubricate the dry skin that make their skin more liable for break and being susceptible to ulceration and infection. evidence supports the use of specific self-management and footwear interventions for the prevention of recurrent foot ulcers is quite strong (van *et al*.,2016)

The importance of knowledge and positive attitudes and good practice foot care are vital in preventing foot ulcers in diabetic patients; however (Kamal ,2014; El-Khawaga et al.,2015; Al-Qaddah *et al*.,2016; Salim *et al*.,2016; Kanakamani,2021).

Conclusions

The prevalence of diabetic foot and ulcerations are high among diabetic patients attending public hospitals in Hilla city- Babylon province .Poor awareness and practices for diabetic foot care were identified .

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