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Prevalence and Analytic Study of Diabetic Patients in El-Beida, Libya

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Abstract: The aim of this study was to find out the prevalence and analyzing some parameters including family history and duration of diabetic foot among diabetic patients in El-Beyda city. This study was conducted to interview 176 patients diagnosed with diabetes at the main center of diabetes treatment in El-Beyda city. Several parameters were detected including age, sex, time of disease, levels of FBS, diabetes foot duration, and family history. Of the 176 patients, 77.8% (n=138), 22.2% (n=38) were female and male respectively, with a mean age of 55 years (20–80). The most frequent diabetes patient age group was 51-60 years old followed by 41-50 years old (34.7% and 28.4% of the patients). The family history of diabetes in the first degree relatives was positive in males 73.7% and in female 67.2%. The majority of the patients (90 %) were on oral hypoglycemic drugs. The age, duration of diabetes, poor foot diabetes, and glycemic control were independent risk factors for the development of long-term diabetic complications. Education is recommended combined with other preventive measures to reduce these complications. In conclusion family history and age of diabets have anindependent association with the prevelence of diabires and their compleatid.

Key words: Diabetes, family history, diabetic foot and Libya.

INTRODUCTION

Diabetes mellitus (DM) is among the most common non-communicable diseases. Humans around the world face many health threats. One of the most significant threats is diabetes mellitus (DM). DM is a chronic disorder of carbohydrate, fat and protein metabolism, characterized by an inappropriate elevation of the blood glucose level, for which a relative or absolute lack of insulin is responsible (Genuth, 1995). Although it has been centuries since DM was first recognized, it is still not fully understood and managed. The global prevalence and incidence of diabetes can lead to a variety of disabling, life-threatening and expensive complications(Amartey *et al.*, 2015**).** In Libya, the type II diabetes affected >70% of the population which is the highest prevalence in North Africa and among Arabic nations. The most possible cause is eating habits (Eltobgi 2009**).** The two standard treatments for diabetic include aggressive glycemic (blood glucose) control and medications to reduce symptoms(Callaghan *et al.*, 2012**).** Better glycemic control in type II diabetes has been associated with significantly lower rates of heart disease, stroke and peripheral vascular disease(Smith and Singleton 2012**).**

Diabetic peripheral neuropathy (DPN) affects approximately 44% of older diabetics(Kumar *et al.*, 1994**).** Diabetic neuropathy is also associated with significantly slower walking speed and significantly more falls(Menz *et al.*, 2004**).** Thus diabetes mellitus and foot ulcers in combination

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increase the risk of amputation due to peripheral neuropathy, ischemia, and deep infections. Self-care is fundamental in diabetes management and prevention, and existing guidelines state the need for patient education as a prerequisite to prevent ulceration (ADA, 2008). The association between family history of diabetes and risk for the disease has been well documented as an important factor in the onset and manifestation of type II diabetes (Meigs *et al.,* 2000, Goldfine *et al.,* 2003, Harrison *et al.,* 2003). According to WHO, it is estimated that there were 88,000 diabetics in Libya in the year of 2000; this prevalence is estimated to reach 245,000 diabetics by the year 2030 (Kadiki and Roaed 1999).The records of the Diabetes Hospital in Tripoli - Libya for the years 1961-1983 were examined and the available particulars relating to 24,962 diabetic patients registered during this period were obtained (Rao 1992). Prevalence of diabetes in Bengahzie for over 20 years of age was 14.1% in the year of 2000 (Kadiki and Roaeid 2001). There were very few studies on the prevalence and characteristics of this disease in the Northeast of Libya. Therefore, the present study was undertaken to estimate the prevalence and characteristics of family history among diabetic patients in El-Beyda city.

MATERIALS AND METHODS

Diabetes Centre is the only outpatient diabetes clinic in El-Beyda, and all diabetic patients were on the register in this center. It provides daily care for diabetics, including medications supply, assessment of metabolic control, and advice about managing hypoglycemia and diabetic foot. Services include testing of blood glucose (fasting and postprandial blood glucose levels). However, there is no current education programe for patients.

The study protocol was reviewed and approved by Bioethics Committee at Biotechnology Research Center (BEC-BTRC) with Ref No: BEC-BTRC 05-2017. This study was carried out during the period between March and July 2017. The study population consisted of 176 Libyan patients with type 2 diabetes (138 female and 38 male subjects). Diagnosis of diabetes was based on World Health Organization (WHO) criteria. Demographic profiles including name, age, diabetes duration, diabetes foot duration, and case of glycemia were obtained from each subject. Family history of diabetes was defined as positive if a parent and/or a sibling was diagnosed as diabetic. Family history of diabetes was determined by the biological relatives parents, sons, daughters, brothers and sisters. The possible biological relatives were multiple-choice. Average fasting plasma glucose $\leq$ 120mg/dl and/or post-prandial plasma glucose $\leq$ 150mg/dl during the previous three months was recorded. (Blood was analyzed for fasting glucose using glucose MR kit (LNEAR CHEMICALS, Montgat, Barcelona, SPAIN) and spectrophotometers (Humalyzer Junior). Data were presented as a percentage of the total.

RESULTS

Of the 176 patients, 77.8% (n=138), 22.2% (n=38) were female and male respectively, with the mean level of fasting blood glucose for male 168 mg/dl and female 183mg/dl. Most patients were diagnosed with hypoglycemia. Mean age of patients was 54.75 years (males 53.9 and females 55.6 respectively). Age distribution relating to 176 established patients by age groups was shown in (Table 1).

Table (1). Age distribution of diabetic patients at diabetes center in El-Beyda city

Age group	Male	Female
20-30	5.3%	2.9%
31-40	2.6%	4.3%
41-50	28.9%	27.5%
51-60	36.8%	34.8%
61-70	23.7%	26.1%
71-80	2.6%	4.3%

Age of the patients varied between 20 years to 80 years. The highest prevalence percentage of the disease was found in the age group (51-60) years with 36.8% for males and 34.8% for females of

the total number of cases, followed by age group (41-50) years for both genders with 28.9% and 27.5% for males and females respectively. Characteristics of family history of patients with different first-degree relatives were shown in (Table 2).

Table (2). Percentage of family history of patients with different first-degree relatives

Characteristic	Family history					
		Yes				
	No	Father	Mother	Son	Daughter	Brother or sister
Male	26.3%	31.6%	52.6%	2.6%	0%	21.1%
Female	32.8%	25.5%	40.1%	5.8%	2.9%	20.4%

The family history of diabetes in the first degree relatives with father was positive in males 31.6%, and females 25.5%. Meanwhile, relatives with mother in male and female subjects were 52.6 % and 40.1% respectively. Percentage of patients with duration of the diabetic foot was shown in (Table 3). The highest percentage prevalence of the duration of diabetic foot was 1-10 years, followed by 11-20 years.

Table (3). Percentage of duration of diabetic foot among diabetic patients

Male			Female		
>1-10 (years)	11-20 (years)	+21 (ye	>1-10 (years)	11-20 (years)	+21 (ye
71.1%	15.8%	13.1%	63.8%	23.9%	12.3%

DISCUSSION

Grant to the last numbers released by the International Diabetes Federation (IDF); A rising trend of DM incidence and prevalence are seen in every nation around the globe. The Arab region appears to experience a higher prevalence of diabetes than the worldwide average (IDF, 2011). There was a linear increase in long-term diabetes complications in both sexes with increasing age and duration of the disease(Roaeid and Kadiki 2011**).** In this study, the number of females was higher compared with male patients and this may be refered to the fact that women were more careful about their health compared to men by making chekup Data from our study showed a variation in age of patients from 20 to 80 years. The highest prevalence percentage of the disease was found in the age group (51-60) years. These results were in agreement with many studies in different Arabic regions (IDF, 2011).

Evidence suggests that family history by itself is most useful for predicting disease. When there are multiple family members affected, the relationship among relatives is close and disease occurs at younger ages than would be expected. It has been mentioned that family history information in combination with other known risk factors could be used to provide more personalized information about our risk for common diseases (Yoon *et al.*, 2002**).** And this was improved in our study, that family history of diabetes in the different first degree relatives who were being positive was between 70-75%. Ulceration of the foot is one of the major health problems for people with DM. It is estimated to affect 15% to 25% of people with diabetes at some time in their lives(Icks *et al.*, 2009). Foot ulceration can result in marked physical disability and reduction of quality of life(O'Meara *et al.*, 2000), not to mention limb loss and even death. Results from our study also showed the highest prevalence percentage of the duration of diabetic foot in the early stage of disease (1-10 years). These results might refer to the lack of education about consequences of this disease.

In addition, family history information can be used to personalize health messages, which are potentially more effective in promoting healthy lifestyles than standardized health messages (Claassen *et al.*, 2010**).** In this study, we provide a brief detailed analysis of the relatives among patients with diabetes and the prevalence of the disease in diabetes center in EL-Beyda city. More

research is needed on the evidence for the effectiveness of such a tool.

CONCLUSION

People after second decade of their age are at incrased risk of diabets if they have a family history of diabetes. Having demonstrated that family history is indeed a powerful independent risk factor for the disease, our efforts should now be directed to word trnslating this knowledge for use in public health programs designed to detectand minmize diabetes.

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دراسة مسحية تحليلية لمرض السكري بين مرضى السكري في البيضاء، ليبيا

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المستخلص: تهدف الدراسة لمعرفة مدى انتشار وخصائص التاريخ العائلي ومدة الإصابة بالقدم السكري بين مرضى السكري في مدينة البيضاء، حيث تم إجراء مقابلات لعدد 176 مريضا مصابين بمرض السكري في المركز الرئيس لعلاج مرض السكري في مدينة البيضاء وتم دراسة العديد من العوامل، بما في ذلك العمر والجنس والوقت المرضي، ومستويات السكر(صيام وتراكمي)، ومدة القدم السكري والتاريخ العائلي. من بين 176 مريضا، 77.8٪ (عدد = 138)، 22.2٪ (عدد = 38) من الإناث والذكور على التوالي، مع متوسط عمر 55 سنة (80-20). وكانت أكثر الفئات العمرية للمرضى هم الذين تتراوح أعمارهم بين 51 و 60 سنة تليها الفئة العمرية 41-50 سنة (34.7٪ و 28.4٪ من العدد الكلي). وكان التاريخ العائلي لمرض السكري في الأقارب من الدرجة الأولى في الذكور 73.7٪ وفي الإناث 67.2٪. وكانت غالبية المرضى (90٪) معتمدين على الأدوية لمعالجة إصابات في العين (مياه بيضاء أو زرقاء). بينت الدراسة أن العمر ومدة الإصابة بالسكري وسوء مرض القدم السكري ونسبة السكر في الدم عوامل خطر مستقلة لتطوير مضاعفات السكري على المدى الطويل. ويوصى بتثقيف المرضى لأخطار مضاعفات المرض خصوصا على المدى الطويل، مقترنا بتدابير وقائية أخرى للحد من هذه التعقيدات.

الكلمات المفتاحية: السكري، التاريخ العائلي، القدم السكري، البيضاء ، ليبيا.

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