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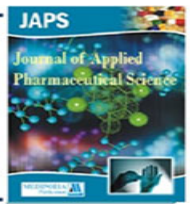

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Awareness of Diabetes Mellitus among UAE Non-Diabetic Population in Ajman and Ras Alkhaimah

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ABSTRACT

The present study aims to assess the level of knowledge of DM among non diabetic people from Ajman and Ras Al Khaimah (UAE) regard to causes, complication, clinical manifestation, management, treatment, drug adherence and control, hypoglycemia associated with diabetic therapy, hypoglycemia management and other aspects related to diabetes. A cross-sectional study was conducted among non diabetic people who were attending GMCH (Gulf Medical College Hospital) community pharmacy in Ajman and RAK hospitals during the period between July and December 2009. A self-administered questionnaire was used as a tool for data collection. The percentage of participants aware of diabetes causes, symptoms, complications, management, drug treatment, drug therapy adherence and diabetes monitoring were 60.4%, 78.7%, 54.8%, 68.9%, 89.8%, 50.6%, and 76.6% respectively. Awareness of hypoglycemic symptoms which can complicate diabetes therapy was only low 23.8%. For the management of hypoglycemia 45.1% of the participants recommended the use of sugar, 23% of them suggested the use of oral medicine and 32% of the participants recommended the use of insulin. The proportions of participants who had correct knowledge of the recommended frequency of follow-up of eye exam, urine test, blood sugar measurement and blood pressure test in diabetic patients were 33.6%, 39.6%, 87.2% and 23.8 respectively. The study showed low awareness of the population about various aspects of diabetes and the least knowledge was noticed on hypoglycemic symptoms, hypoglycemia management and diabetes complications. We recommend education program to improve population knowledge regards diabetes which can create enthusiasm to improve diabetes care and can go a long way in the prevention and management of diabetes in the Gulf region and UAE in particular.

Keywords: Diabetes Mellitus, People awareness, Hypoglycemia management, Knowledge.

INTRODUCTION

Diabetes Mellitus (DM) is a major health problem in the world. It is one of the most prevalent metabolic diseases which can lead to enormous medical as well as socio-economic consequences (Wandell *et al*., 1997). DM is currently the fastest growing debilitating disease in the world. It is estimated that one out of five people aged 20 to 79 lives with this disease, while a similar percentage of the population is at risk of developing it (IDF, 2007).

According to WHO, the United Arab Emirates (UAE) is among the top ten countries where the disease is prevalent. About 19.5 % of the UAE's population is now living with diabetes (El Shammaa *et al*., 2008) A study in UAE shows that 40% of residents over 60 have diabetes and the number is expected to increase over the coming years (IDF, 2007). In the Gulf region, which has a population of approximately 33 million, there are more than 3.5 million diabetics. Sedentary lifestyle and bad eating habits have been blamed for the increasing prevalence of diabetes in the UAE (Barakat, www.icldc.ae/faq.html). A study conducted in Al Ain / UAE also proved the high prevalence of DM in the UAE, confirming the above mentioned reports. It shows that diabetic complications were highly prevalent among subjects with diagnosed and undiagnosed DM (Saadi *et al*., 2007). A survey aimed to assess the level of awareness and knowledge among the general population with regard to causes, risks and complications of diabetes conducted by (Novo Nordisk 2010), a global healthcare company, in 10 countries of the Middle East and Northern Africa (MENA) region, showed that 40% of respondents were at risk of developing diabetes in the MENA region based on this survey, 54% in Egypt, 52% in KSA, 45% in Lebanon, 44% in Iraq and 42% in UAE. The study mentioned that 80% of respondents were not told that they are at risk of developing diabetes and three quarters (74%) of those at risk of developing diabetes (according to the risk score calculated through this survey) have not been told that they are at risk of developing diabetes. 37% of those at risk of developing diabetes have never been screened for diabetes nor had a blood sugar measurement. 40% of those at risk of developing diabetes considered diabetes as a benign condition. Another study explored the knowledge of and attitudes towards diabetes, diabetes prevention and management, and health promotion of patients attending medical centers in Sharjah/UAE. A gap in self management knowledge including self monitoring was noticed in this study (Sulaiman *et al*., 2009). The above study concluded that the behavior changes in life style (diet, lack of physical activity, stress) to manage diabetes were hindered by cultural and contextual factors, and recommended the development of creative strategies to overcome these constrains. DM is one of the five leading causes of death worldwide (Caliskan *et al*., 2006). Moreover individuals with diabetes are at higher risk of heart disease, stroke, high blood pressure, blindness, kidney disease, nervous system disease, dental disease and complications of pregnancy (Akinci *et al*., 2003). The microvascular and macrovascular complications could have devastating consequences on the health of people with diabetes (Saydah *et al*., 2004). Knowledge and awareness about DM, its risk factors, complications and management are important aspects for better control and better quality of life (Wild *et al*., 2004) (Angeles *et al*., 2005). The present study aims to assess the level of knowledge of DM among non diabetic people from Ajman and Ras Al Khaimah (UAE) regard to causes, complication, clinical manifestation, management, treatment, drug adherence and control, hypoglycemia associated with diabetic therapy, hypoglycemia management and other aspects related to diabetes.

MATERIALS AND METHODS

A cross-sectional study was conducted among non diabetic people who were attending GMCH (Gulf Medical College Hospital) community pharmacy in Ajman and RAK hospitals during the period between July and December 2009. A nonrandomized sampling strategy was used. Collection of data was done once weekly during period of study. Verbal consent was obtained from the participants before enrollment in the study. A self-administered questionnaire was used as a tool for data collection. The questionnaire was prepared by the investigators and validated by two specialists [one community medicine and one clinical pharmacist].

The questionnaire was divided into two parts. The first part included information on socio-demographic characteristics of the participants. The second part included twenty questions focused on the knowledge of diabetes etiology (high blood sugar and low insulin level in blood), clinical manifestation (increased thirst, urination frequency, tiredness and slow healing of wound), complications (eye and kidney problems, foot ulcers and heart problems), management and life style modification required for diabetic (weight reduction, stopping smoking and alcohol, regular exercise, blood sugar monitoring, planned diet, medication and education), Drug treatment (with metformin, insulin), drug therapy adherence (diabetic medicine can be stopped immediately or after one month or should be continued lifelong, and can diabetic person miss his/her medication dose), monitoring method (checking blood sugar or urine sugar level), hypoglycemic symptoms (weakness, confusion, visual disturbances), hypoglycemia management (taking sugar, or medicines or insulin), various aspects related to diabetes (frequency of eye examination, urine test, blood sugar and blood pressure test recommended for diabetic patients). The participants were assessed for their knowledge by a scoring system based on assigning marks to every question. These scores were converted into percentage at the time of analysis. Data was analyzed using SPSS software version17. Proportions and percentages were used to summarize categorical variables. For ethical considerations a verbal consent was taken from the participants before enrollment in the study. Confidentiality of the participants was preserved.

RESULTS

The study include 235 participants, 115 from Ajman and 120 subjects were from RAK. The study included 148 males (63%) and 87 females (37%). Distribution of the studied participants by age and gender is shown in table 1. Majority of participants were less than forty years old, both males (83.1%) and females (80.5%). Table 2 shows distribution of participants by nationality. It can be seen that high percentage of participants was UAE citizen. Table 3 shows distribution of participants by level of education. The higher percentage of participants had secondary school degree. Seventy of participants (29.8%) had diabetic family member. Table 4 shows percent response of participants who have correct knowledge in different domains. Data shows that the highest percentage of

response was recorded for the clinical manifestation (78.7%) and drug used in DM treatment (89.8%), then DM management (68.9%) and DM etiology (60.4%). While the lowest percentage for correct response was scored for the knowledge of DM complication (54.8%), drug therapy adherence 50.6%, hypoglycemic symptoms (23.8%) and the managements of hypoglycemia (45.1%). Table 5 shows participant correct knowledge response for various aspects related to diabetes including frequency of eye examination, urine test, blood sugar test and blood pressure test (33.6, 39.6, 87.2, and 23.8 respectively). The highest knowledge response was scored for the frequency of blood sugar test.

Table. 1: Distribution of participant by age and gender.

Gender	Age					
	> 40 years		< 40 years		Total	
	Number	%	Number	%	Number	%
Male	25	16.9	123	83.1	148	63
Female	17	19.5	70	80.5	87	37

Table. 2: Distribution of participant by nationality.

Nationality	Number	%
UAE	102	43.4
Indian	63	26.8
Iraqi	24	10.2
Palestine	24	10.2
*Others	22	9.4

Table. 3: Distribution of participant by level of education.

Education level	Number	%
< secondary school	35	14.9
secondary School	93	39.6
Diploma	60	25.5
College	47	20.0

Table. 4: Number (%) of participants who have correct knowledge in different domains.

Knowledge Domain	Male , n=148 (% Response)	Female, n=87 (% Response)	Total 100 % (n= 235) % (no)
Etiology	89 (60.1)	53 (60.9)	60.4
Clinical manifestation	123 (83.3)	62 (71.3)	78.7
Complications	74 (50)	55 (63.2)	54.8
Management	102 (68.9)	60(68.4)	68.9
Treatment by drug	130 (87.5)	81 (92.8)	89.8
Drug therapy adherence	71 (47.9)	48 (55.2)	50.6
Monitoring	130 (87.5)	50 (57.1)	76.6
Hypoglycemia symptoms	31 (20.8)	25 (28.5)	23.8
Hypoglycemic management	62 (41.9)	44 (50.6)	45.1

Table. 5: Number (%) of participants who have correct knowledge in various aspects.

Various Aspects	Male , n=148 (% Response)	Female, n=87 (% Response)	Total 100 % (n= 235) % (no)
Eye examination	42 (28.4)	37 (42.5)	33.6
Urine test	68 (45.9)	25 (28.7)	39.6
Blood sugar test	130 (87.8)	75 (86.2)	87.2
Blood pressure test	31 (20.9)	25 (28.7)	23.8

There is variation between the knowledge of male and female towards different DM domains. Data showed that males had good knowledge compared to female in some DM domains and less in others.

DISCUSSION

The present study demonstrates adequate knowledge score towards DM etiology, clinical manifestation, management, drug treatment, and monitoring. This may be attributed to the level of education of participants in this study (85% of them had either secondary, diploma and university education). This is in agreement with previous studies that showed the association between level of education and the increase in DM knowledge (Caliskan *et al*., 2006)(Kamel *et al*., 1999)(Powell *et al*., 2007). The high percentage of correct knowledge about the above mentioned domains of DM in this study may be explained by the high prevalence of DM among UAE population. Awareness about complications of DM was found to be low; this is consistent with other studies in UAE (Saadi *et al*., 2007) and (Novo Nordisk 2010). In fact DM is a chronic disease that requires ongoing monitoring and treatment (Grandy *et al*., 2008). There is a misconception that treatment should be stopped if blood sugar is well controlled for months, this may lead to dissemination of incorrect information by the participants to their diabetic relatives. In addition Knowledge score of the participants regard the diabetic patients' adherence to their therapy is low; this will lead to complication of diabetes. In this study 29.8% of the studied population have diabetic family member. The study shows that people's practical approach is low towards diabetes and motivating their diabetic family members to get their blood sugar test, blood pressure, urine test and eye examination done as recommended by international guidelines. Nearly all patients with Type 1 diabetes develop retinopathy, and most patients with Type 2 diabetes eventually develop some degree of it (Akinci *et al*., 2003). Hypertension is also a well-known cardiovascular risk factor that is highly prevalent in Type 2 diabetes and in persons with overweight/obesity (Kamel *et al*., 1999). There are recommended diabetes care standards and guidelines that are used to guide patient health care team in recommending the management strategies that will help people to meet their glucose targets and to reduce the occurrence of diabetes complications (American Diabetes Association, eye complication, 2005) and (American Diabetes Association, diabetes care, 2005). Blood pressure measurement is recommended at every doctor visit to monitor for heart disease, Retinal eye examination every year to detect diabetes eye disease early and urine microalbumin test every year, to detect diabetes kidney disease early. Lifestyle changes (diet and exercise) are typically the first-line treatment for Type 2 diabetes and can be very effective in controlling blood glucose levels early in the disease. When this treatment fails to maintain adequate glucose control, oral hypoglycemic agents are usually the next step (Cooppan, 2003). Over time, due to the progressive nature of Type 2 diabetes, a combination of oral agents is frequently necessary to maintain glucose control (White *et al*., 2003). The study shows that people awareness about hypoglycemic symptoms and management of hypoglycemia is low. Education of people about management of hypoglycemia is required. Well-planned short education programmes are useful in improving knowledge and in creating

enthusiasm to improve diabetes care and awareness (Murugesan *et al*., 2009). The study highlighted the need of people in UAE for better health information through large scale awareness interventions regarding diabetes. This may be achieved by using audio-visual aids, as well as posters showing patients with diabetes complications and their consequences such as lower limb amputation, blindness and renal dialysis; hypoglycemic symptoms after drug treatment such as weakness, confusion, and visual disturbances and how to control hypoglycemia. In addition diabetic patient adherence to their anti-diabetic therapy can be achieved through patient counseling by clinical pharmacist or health professional to improve diabetes care and can go a long way in the prevention and management of diabetes in the Gulf region and UAE in particular.

CONCLUSION

According to WHO, the UAE is among the top ten countries where the disease is prevalent. A sedentary lifestyle and bad eating habits have been blamed for the increasing prevalence of diabetes in the UAE.

Our data shows that, non-diabetic population in Ajman and Ras Al Khaimah (UAE) has enough knowledge of the different DM domains like etiology, clinical manifestation, treatment and monitoring. However, they are not very well aware of the severe complications diabetes can cause if it is not controlled. Moreover they are not aware about hypolglycemic symptoms associated with anti-diabetic therapy and the management of hypoglycemia. The study showed low awareness of the population about various aspects of diabetes and motivating their diabetic family members to get their blood sugar test, blood pressure, urine test and eye examination done as recommended by international guidelines. So it is imperative that the authorities take up mass education program which would go a long way in the prevention and management of diabetes in the Gulf region and UAE in particular.

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