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Research Article

Prevalence of Diabetes Mellitus among Patient Presented in Endocrinology Clinic at King Abdul-Aziz Hospital and Oncology Center – Jeddah – 2014

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Abstract

Background: Diabetes mellitus (DM) is a major public health problem worldwide. The epidemiology of DM has changed by new recommendations for the diagnosis of diabetes. Therefore, we designed this study with the objective to determine the prevalence of DM among Saudis of both sexes, between the ages of 20 - 70 years in rural as well as urban communities.

Results: The prevalence of DM was 62.5%; of them 37.94%men and 24.57%women. The prevalence of DM increased with age of patients over45 years 44.15%. DM was associated with various measures of adiposity. DM was also associated with and family history of diabetes mellitus, dyslipidemia, hypertension, and least with cardiovascular disease in both sexes.

Conclusion: The overall prevalence of DM in adults in KSA is 62.5%. With a desire of targeting high risk groups should be implemented for prevention of DM by organizing a national prevention program at community level. For practical and logistic reasons, the study population was drawn from the local primary health care centers' catchment's areas. The catchment's population of each primary care center was taken as a cluster.

Keywords: *Diabetes Mellitus; Dyslipidemia; Hypertension*

Introduction

The prevalence of diabetes mellitus (DM) is was found to be related to another health problem which is obesity [1]. Saudi Arabia has a particularly high prevalence of both conditions [1-4]. Once established, DM is irreversible. It is a developing slowly but with progressive condition; and it can take many years to progress from prediabetic to diabetic state without interventions [5]. Therefore, attempting to prevent this progression or at least to delay it should be a superior national health strategy than only attempting to manage the disease after it is established [6]. An established basis for a prevention strategy is to identify common risk modifiable factors that have the greatest contribution to morbidity, and develop community based programs for their prevention and control. This has been discussed thoroughly

in the "European Evidence-Based Guideline for the Prevention of Type 2 Diabetes" [7], with steps and strategies needed to implement prevention outlined elegantly by Lindstrom., *et al* [8]. Although it is obvious that it is important to know the true magnitude of the major disease such as DM, reliable data on its prevalence are lacking for most countries. Previous studies in Saudi Arabia have been not been based on representative population samples, and have used fasting glucose values only.

Methodology

Study Setting: The study was conducted in the City of Jeddah, endocrinology department at King Abdul-Aziz Hospital and oncology center.

Study design: A cross-sectional study of among Saudi patients.

Variables: The dependent variable in this study was patient gender, age, history of diabetes mellitus [DM], body mass index [BMI], and associated disease.

Socio-demographic variables:

- Gender was defined as male or female.
- Age was identified as 20 - 30, 35 - 45, over 45 years old.
- History of diabetes mellitus was defined as yes and no question.
- BMI was identified as Below 18.4, 18.5 - 24.9, 25- 29.9, Over 30.
- Association with other disease defined as Family History of DM, Dyslipidemia, Cardiovascular Disease, Hypertension

Data collection: Data collection during the month of March 2014 from those attending the Department of endocrinology. All participants were approached and given a brief description of the study and approval was obtained.

Data analysis: Statistical analyses were performed to detect the association between different independent variables using SPSS.

Results

As shown in table 1, a total of 2820 patients attending the Department of Endocrinology were included in this study. There were 1150 (40.8%) males and 1670 (59.2%) females. Most of the patient 1422 (50.43%) were over 45 years old, had DM 1763(62.52%), and body mass index [BMI] between 25 - 29.9 were 1050 (37.23%). Overall participants were had family history of DM, dyslipidemia, cardiovascular disease, and hypertension (50.1%, 22.1%, 33.4%, and 70.5%).

In figure 1 show the prevalence of diabetes mellitus among our participant; overall 62.5% were diabetic.

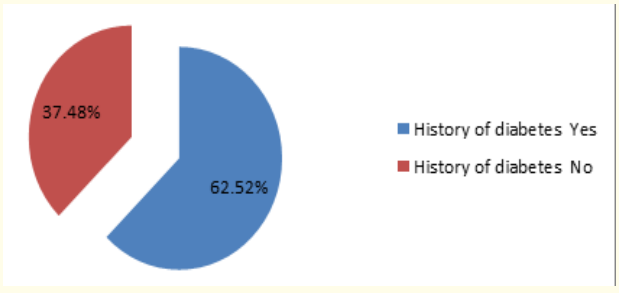

Figure 1: *Prevalence of diabetes mellitus in relation to the gender.*

Socio-Economic Variable		Number	Percentage
Gender	Male Female	1150 1670	40.8% 59.2%
Age	20 - 35 Year 35 - 45 Year Over 45 Year	346 1052 1422	12.27% 37.3% 50.43%
History Of Diabetes mellitus	Yes No	1763 1057	62.52% 37.48%
Body Mass Index	Below 18.4 18.5 - 24.9 25 - 29.9 Over 30	153 674 1050 943	5.42% 23.9% 37.23% 33.44%
Association With Other Disease	Family History of DM Dyslipidemia Cardiovascular Disease Hypertension	1412 623 943 1987	50.1% 22.1% 33.4% 70.5%

Table 1: *Socio-Economic Variable.*

Figure 2 show distribution of DM in relation to the gender; most of the diabetic patients were male 1070 (37.94%), and diabetic female were 693 (24.57%).

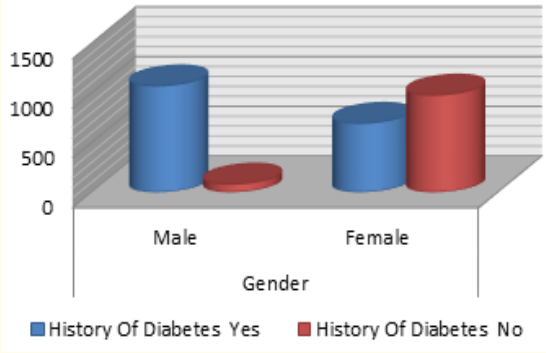

Figure 2: *Distribution of diabetes mellitus in relation to the gender.*

As shown in figure 3 distribution of DM in relation to the age; most of the participants were over 45 years old 1245 (44.15%) while only 66 (2.34%) were between 20 - 35 years old.

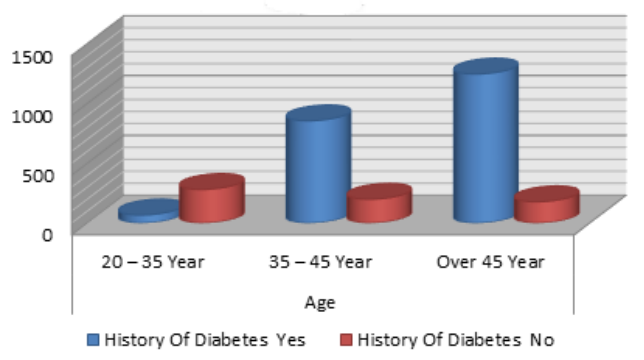

Figure 3: *Distribution of diabetes mellitus in relation to the age.*

Figure 4 present the distribution of DM in relation to the BMI which show most of the diabetic had over30 BMI 812 (28.79%) followed by 25 – 29.9 BMI 630 (22.34%) and 123 (4.36%) for BMI between 18.5 - 24.9 while none of the diabetic had BMI below 18.4.

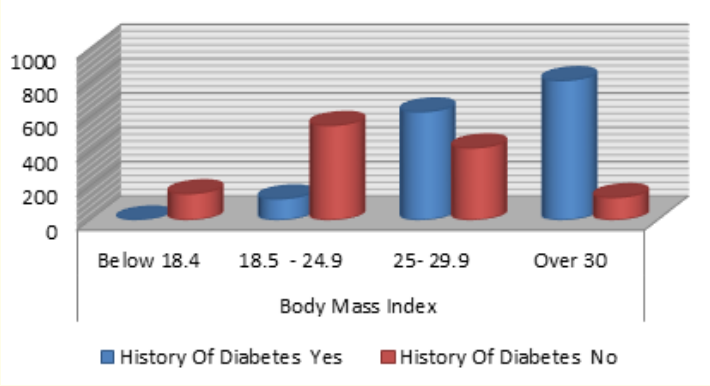

Figure 4: *Distribution of diabetes mellitus in relation to the body mass index*

As shown in table 2 distribution of DM in relation to the associated disease; most of the diabetic had family history of DM followed by hypertension, dyslipidemia, and cardiovascular disease (49.75%,47.38%, 16.81%, 7.62% respectively).

Family History of DM		Risk Factor			
		Dyslipidemia	Cardiovascular Disease	Hypertension	
History of Diabetes	Yes	1403	474	215	1336
		49.75%	16.81%	7.62%	47.38%
	No	9	149	728	651
		0.32%	5.28%	25.82%	23.09%

Table 2: *Distribution of diabetes mellitus in relation to associated disease.*

Discussion

Diabetes and obesity are multifactorial diseases of considerable heterogeneity [9]. The prevalence of diabetes worldwide will see an increase of 50% between the years 2014 and 2016 [10]. Globally, diabetes prevalence is similar in males and females, but it is slightly higher in men < 60 years of age and in females at older ages [11], which was not observed in our study. Overall, diabetes prevalence is higher in males was true in our study. Our data demonstrate an increasing prevalence of diabetes mellitus with advancing age; the fact that diabetes prevalence increases with age is consistent with the findings in previous studies [2,12]. The dramatic increases in the prevalence of diabetes can be explained by several factors. First, it is a disorder of the elderly; Over 23% of individuals aged 68 or more have diabetes. Studies from Saudi Arabia have shown different age-specific prevalence rates [2,12].

Second, diabetes is closely linked to obesity. The prevalence of obesity has also increased at a double-digit pace over the past decade, having risen dramatically in North America. In the United States, there has been a 68% increase in prevalence of obesity since 2014, being most likely the result of cheap, "super-sized" meals and dwindling physical activity [13,14]. A higher prevalence of obesity in diabetics is well known, with 65% to 72% of people diagnosed with type 2 diabetes being obese [15].

The results of this study have three important implications for national diabetes prevention and diabetes management programs. First, it appears that diabetes prevalence rates will almost certainly continue to rise in the Saudi population over the next two decades. The rapid aging of the currently very young Saudi population to a high-risk older age, coupled with emerging life-prolonging diabetes treatments, will maintain a balance between incidence and mortality in the foreseeable future. Even if incidence rates were to flatten out or decline due to a breakthrough in diabetes prevention, prevalence rates would continue to rise as incidence outpaces mortality. As a result, the health burden due to all types of diabetic complications will likely continue. This means that the health care and social service systems should start preparing now to provide the secondary prevention and support services and systems that a large number of adults with diabetes are going to require to maintain a reasonably good quality of life. The relationship to earlier episodes of gestational diabetes should be investigated as one possibility.

This study has methodological limitations that must be kept in mind when interpreting its results. National health surveys depend commonly on data collected through self-administered questionnaires due its lower costs. In several studies, self-reported data were compared with data from medical records, disease registries or the results of clinical and laboratory investigations. Our data has relied exclusively on data derived from a self-reported questionnaire, along with interview with patients to estimate diabetes prevalence. Since this approach depends upon diabetes cases being recognized, diagnosed and recorded. Self-reporting information of diabetes can lead to inaccurate estimates of its prevalence rates; however, self-reporting of diabetes has a better validity than that of other chronic diseases [16]. This study does not differentiate between type 1 and type 2 diabetes, but given that type 2 diabetes constitutes 90% to 95% of all diabetes cases, the use of 'diabetes' in this study is likely a valid proxy for 'type 2 diabetes'.

To conclude, this study has provided epidemiological information on the extent of diabetes mellitus as a health problem and has emphasized the value of having accurate population-based information on the epidemiology of diabetes in our population for future planning and implementation. By providing information on the trend and the geography of diabetes in our center, this study provides important clues as to the magnitude and structure of the primary and secondary intervention programs that will be required to effectively manage this disease.

Conclusion

The overall prevalence of DM in adults in KSA is 62.5%. A national prevention program at community level targeting high risk groups should be implemented sooner to prevent DM. For practical and logistic reasons, the study population was drawn from the local primary health care centers' catchment's areas. The catchment's population of each primary care center was taken as a cluster.

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