Prevalence of diabetes and its associated risk factors in south-western Uganda

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Abstract

Diabetes mellitus is a major pandemic disease globally with both high morbidity and mortality and a high health cost, especially in developing countries. Hence there is a need to establish its prevalence and risk factors. This article reports on a group of diabetic patients in Sheema district, south-western Uganda. The records of 701 adult diabetic out-patients were reviewed, as well as a cross-sectional study of 100 in-patients (both diabetic and non-diabetic) at Kitagata Hospital, Sheema District, south-western Uganda. Questionnaires were used for data collection and data analysis was done using the Statistical Package for Social Sciences (SPSS) version 16. The differences in proportion were tested using the Chi-square test, and p value significance was set at $p<0.05$. The prevalence of diabetes in the hospital was 2.5%. Type 2 diabetes was the most predominant (79%), having an increased prevalence in those >30 years old; women were mostly affected (60%). There was a strong relationship between diabetes type and age ($p<0.001$) and gender ($p=0.035$). Risk factors included family history (74%, $p<0.001$), smoking (48%, $p=0.002$), hypertension (45%, $p<0.001$), and alcohol intake (36%, $p=0.795$). We conclude that diabetes is common in our hospital population, and major risk factors identified include family history, smoking, and hypertension. Everyone above the age of 35 years with a diabetic relative and/or with hypertension should be routinely screened for diabetes.

Introduction

Diabetes mellitus is a major pandemic disease globally with both high morbidity and mortality and a high health cost to individual patients, their families, and countries, especially in the developing world.[1] Type 2 diabetes is on the rise in both adults and young populations with a projection of a 1.5 times rise in 2030 from the 285 million in 2010 in adults above 20 years of age worldwide.[2] Most (69%) of the increase in type 2 diabetes is anticipated to occur in low-income countries, which will present a great burden to the already constrained health systems of these countries.[3] In Uganda, the diabetes population has drastically increased from an estimated 98 000 patients in 2000 to about 1.5 million in 2010 – from a population of 30 million people.[4] It should be noted, however, that despite the increase in diabetic burden, interventions are poor and epidemiological data scarce. There is no national non-communicable disease (NCD) survey in Uganda, so information is from a few local surveys.[3] Good data, however, are necessary for proper planning. Research has shown that genetic predisposition maybe a key risk factor for diabetes, along with the interplay of environmental factors such as diet, sedentary lifestyle and overweight.[4–6] This study was therefore planned to establish diabetic frequency and associated risk factors among our population.

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Patients and methods

The study was carried out in Kitagata Hospital, a tertiary hospital in Sheema District, south-western Uganda. Ethical approval was sought from Kampala International University Research Committee and permission from the medical superintendent of Kitagata Hospital, as well as consent from the individual participants. The participants were diabetic and non-diabetic patients admitted to the facility from May to October 2014, who were from Sheema District and over 20 years of age.

In addition, 100 in-patients (both diabetic and non-diabetic) were studied in more detail in a randomised cross-sectional design study. They comprised 42 (42%) with diabetes, 41 (41%) without diabetes, and 17 (17%) with uncertain status.

A structured questionnaire with both open and closed questions was administered to the patients, and filled in by the researchers during the interaction. The data obtained were analysed using Epi-Information systems and the Statistical Package for Social Sciences (SPSS) version 16 to generate descriptive statistical information; Chi square tests were used for comparison of data, with a significance set at $p<0.05$.

Results

During the study period, there were 28 122 patients admitted, of whom 701 had diabetes. This gave a period prevalence rate of 2.5% (25 per 1000 patients). Type 2 diabetes was predominant at 79%, and the most affected age was 31–69 years (77%) (Figure 1). Females were the most affected group (60%) for both type 2 and type 1 diabetes. Further analysis showed that diabetes type was strongly affected by gender ($p=0.035$) and age ($p<0.001$).

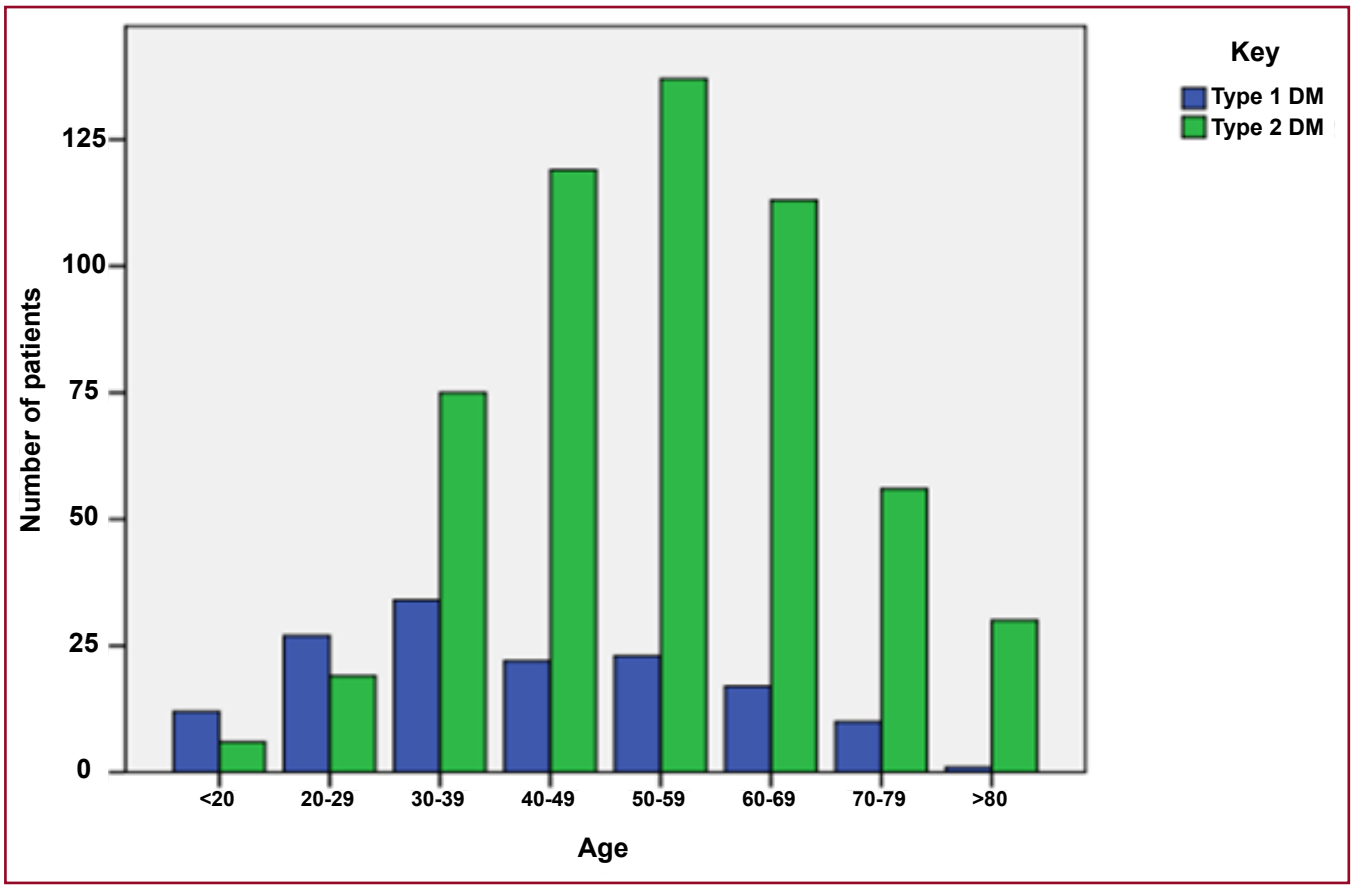

Figure 1. Frequency of diabetes by age among adult patients attending Kitagata Hospital in Sheema District, Uganda; between May and October 2014

In the cross-sectional study, 6% of those who smoked had diabetes (p=0.002), and 83% of those with hypertension also had diabetes (p<0.001). Of those who drank alcohol, 47% had diabetes, which was not statistically significant (p=0.795). Family history was positively associated with diabetes – 60% of those with a diabetic relative had the disease themselves (p<0.001). With regard to risk factors for diabetes (defined as smoking, hypertension, and alcohol consumption), of those who were aware of their associations, 32% had diabetes, which was statistically significant (p<0.001).

Discussion

The prevalence of diabetes in the hospital in our study was 2.5%, which is lower than the estimated prevalence in Africa of 4.9% in 2013,[7] and the 5% estimated for Uganda in 2010.4 However, this figure is higher than the prevalence of 1% reported in rural Uganda in 2013.[8] Type 2 diabetes constituted 79% of the cases in our study, probably related to patients' lifestyles, particularly those who are obese or overweight.[5,9] It should be emphasised that our study assessed hospital prevalence, and is therefore not directly comparable with community prevalence studies.

Smoking was associated with diabetes (p=0.002), and this risk may increase with the amount smoked by causing oxidative and inflammatory stress.[10] Heredity is a key risk factor for diabetes with a 60% contribution, and this agrees with other research concerning the role of heredity in diabetes.[5,11] Hypertension commonly co-exists with diabetes and vice versa. This is evidenced by the fact that 50% of diabetic patients in India have hypertension, and this may herald the onset of diabetes.[8]

In our study, 32% were alcohol users, though there was no statistical relationship (p=0.795) between alcohol use and diabetes. Knowledge of more than three risk factors for diabetes was associated with having diabetes (p<0.001).

In conclusion, hospital diabetes prevalence was 2.5% in our study, with type 2 diabetes the most predominant (79%), also having an increased prevalence in those >30 years. The major risk factors were heredity, smoking, and hypertension, and knowledge of these factors was common among diabetic patients. We recommend that all those over 35 years of age with a diabetic relative and/or hypertension should be screened for diabetes, and appropriate education given to all those with diabetes.

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Author declaration

Competing interests: none.

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