Original Research

Prevalence of overweight and obesity among hypertensive and diabetic patients seeking care at a rural Kenyan hospital: a cross-sectional study

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Abstract

Background: The current global epidemic of overweight and obesity contributes significantly to disease burden through mortality and morbidity. This study aimed at estimating the burden of overweight and obesity among hypertensive and diabetic patients.

Methods: We conducted a retrospective review of medical records at the medical outpatient clinic at Consolata Hospital, Meru County. Records with complete demographic information, specified diagnosis, Body Mass Index (BMI) recorded at least once in the previous three visits were eligible for inclusion. Records for patients below 18 years and above 69 years were excluded. The data was then cleaned in Ms-Excel and analyzed using Statistical Package for Social Sciences (IBM SPSS, version 22). Descriptive and differential statistics were calculated.

Results: A total of 350 records were eligible; mean age 58.2 years (56.8-59.6) while 67% were female. Hypertension was present in 49% of the study subjects, 36% had type 2 diabetes while the rest had both conditions co-existing. The mean BMI overall was 26.6kg/m^2 (24.5-27.2). Females had a higher mean BMI by 0.95kg/m^2 (95% C.I, -2.07-0.16, P=0.093). Overall, 54% of males had a BMI of 25-29kg/m^2 while 18% had a BMI of 30kg/m^2 and above. This is compared to 59% and 26% of the females, respectively.

Conclusion: Overweight and obesity is highly prevalent in this population of hypertensive and/or type 2 diabetic patients. Weight management needs to be integrated in the package of care for these patients.

Key words: Overweight, Obesity, Prevalence, Kenya

Introduction

Obesity and overweight have lately become a major global epidemic with a significant impact on morbidity and mortality. Currently about 1.5 billion people globally are obese [1]. Overweight and obesity are also the fifth leading risks for global deaths, with at least 2.8 million adults dying annually as a result of this malnutrition [2]. Of importance, hypertension and diabetes are frequently associated with obesity, hence constituting a major challenge in both morbidity and escalating health care costs [3]. The epidemic currently is rapidly rising in the developing world, adding on to the other increasing contributors of non-communicable disease burden as well as infectious diseases that continue to be a challenge in these settings. Being obese or overweight is the most modifiable risk factor for both diabetes and hypertension [4, 5], as well as for other cardiovascular diseases [6]. The effects of obesity and overweight are most likely much higher in developing than in high income countries because in the latter there is better access to healthcare and adequate prevention programmes that help to manage cardiovascular risk factors [7] and delay complications [8].

In the Global Burden of Disease 2013, the prevalence of obesity and overweight in adults over 20 years in Kenya was 30.0% in men and 34.1% in women [9]. Several population based surveys done in Kenya have shown significant association between obesity and non-communicable diseases. For example, in a population based survey in a Nairobi slum, Ayah *et al* [10] reported the odds of obesity in type 2 diabetes to be 3 fold compared to those without the disease. We aimed at determining the prevalence of overweight and obesity in diabetic and hypertensive and compare the findings to the Kenya national prevalence as well as other African studies.

Materials and Methods

A retrospective review of medical records in hypertensive and diabetic clinics at Consolata Hospital, a regional, faith-based referral hospital in Meru County, Kenya was carried out. In every visit these patients had their BMI readings recorded; the latest recording was used for the study. Ethical approval was sought from the institutional ethics and research committee, no consent was necessary since there was no interaction between the study subjects and the researchers. Records of adults between ages 18 to 69 years, with diabetes type 2, hypertension or both were eligible for inclusion into the study. Records of non-ambulatory patients, presence of other chronic co-morbidities such as cancer, osteoarthritis, stroke and cardiac disease or incomplete demographic and BMI details were excluded. The study focused on records of patients seen between January and December 2015. Data were collected into abstraction forms, cleaned in Ms-Excel and analyzed using Statistical Package for Social Sciences (IBM SPSS) version 22. Percentages were calculated for categorical variables while continuous ones were described using means. The independent samples T-test was used to check difference/equality of mean BMI between the sexes.

Results

Out of 400 patients whose records were reviewed in this study only 350 of them were eligible for the analysis, 67% females and 33% males (Figure 1).

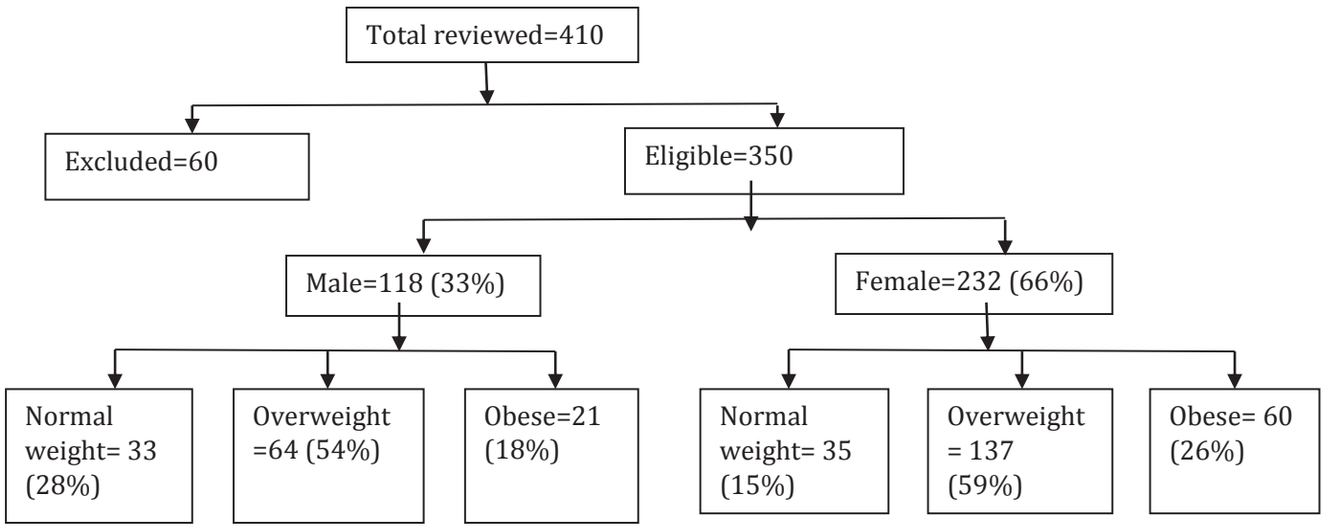

Figure 1: Distribution of weight in the participants based on gender

The mean age of the patients was 58.2 years, range 56.8 - 59.6 years. Hypertension was the most prevalent diagnosis at 49% (Table 1).

Table 1: The overall frequencies of diabetes type 2, hypertension or both conditions in the study population

Diagnosis (n = 350)	No. of patients	Frequency (%)
Hypertension	173	49.4
DM type 2	125	35.7
DM type +hypertension	52	14.9
Total	350	100.0

The overall mean BMI was 26.6 kg/m^2 (Table 2), range 26.1-27.1, overweight 54%, overweight (BMI 25-29kg/m$^{2)}$ while 18% were obese (BMI of 30 kg/m^2 and above). This is as compared to 59% and 26% of women respectively. Combined, 72% of males and 85% of females had high BMI in the study.

Table 2: Prevalence of overweight and obesity in different age groups

Age group (years)	Overweight and obese (BMI ≥ 25Kg/m^2) (n= 350)					
	Hypertension		DM type 2		Combined	
	Male	Female	Male	Female	Male	Female
18-29	2.0	3.7	1.1	5.1	3.1	8.9
30-49	3.4	7.1	4.9	9.1	8.9	16.3
50-69	5.4	15.1	6.9	16.9	12.3	32.
Total	10.9	26.0	12.9	31.1	23.7	57.1

Females had a higher mean BMI than males with a difference of 0.95 kg/m^2 (Figure 2) but there was no significant difference (95% confidence interval -2.07-0.16, P=0.093).

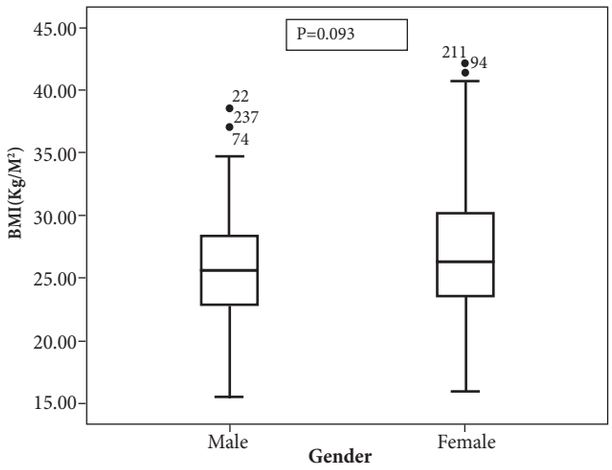

Figure 2: Comparison distribution of BMI between males and females

Discussion

Our study shows a high prevalence of overweight and obesity in this high-risk population. The global prevalence of overweight and obesity is increasing [9, 11] and with it comes the increased burden of diabetes type 2, hypertension and cardiovascular diseases. Though initially the epidemic was primarily observed in Europe, North America and Pacific Islanders, there is currently a gradual increase in prevalence of overweight and obesity in the third world attributed to rapid urbanization, adoption of Western lifestyles, poor nutritional habits and reduced physical activity [12]. Being overweight or obese has a role in pathogenesis of type 2 diabetes and hypertension as well as attainment of treatment targets [13]. Approximately 8 out of every 10 patients with diabetes type 2 or hypertension in our study had either overweight or obesity, similar results have been reported in other studies [14]. Though there was no statistically significant difference in the overall mean BMI between males and females, the prevalence of overweight and obesity in women was higher in men than women, and similar findings have been reported in other studies [1, 9, 15]. Prevalence of obesity of 18% in men and 26% in women is comparable to findings from a study by Amira *et al* [1] done in an urban African setting. However, this is higher than the prevalence for Kenya reported in the Global burden of disease study, 2013 [9]. Our study shows that these nutritional disorders are more prevalent in diabetic and hypertensive patients than in the general public. The pathogenesis of type 2 diabetes, hypertension and obesity seems to share the same pathways, though the exact driving factors are yet to be elucidated. Neuro-hormonal mechanisms primarily insulin resistance, sympathetic nervous system activation and stimulation of the Renin-Angiotensin-Aldosterone System (RAAS) are thought to be involved [16] as are environmental, genetic, lifestyle and behavioural factors. The latter offer opportunities for cost-effective public health interventions. The benefits of management of overweight and obesity in patients with diabetes type 2 and hypertension has been proven [2, 4]. This can be achieved through dietary and lifestyle modifications and regular physical exercises.

A particular strength of our study was that it attempted to quantify the level of overweight and obesity in demographics with the highest impact. However, due to the cross-sectional nature of the study, we were not able to study the trends of glycaemic and blood pressure controls when weight management was instituted.

Conclusion and Recommendations

The study shows that overweight and obesity is a common cor-morbidity in patients with type 2 diabetes and hypertension in Kenya. Since this has an effect in the overall attainment of treatment goals for the two conditions, we recommend that management of overweight and obesity be incorporated fully in the treatment programs of diabetes type 2 and hypertension. Patients need to be educated on the importance of such

interventions, encouraged on self-care through regular physical exercise and healthy nutritional practices and offered professional advice on the attainment of set weight goals. More research needs to be done in African settings to determine differences, if any, of glycaemic and blood pressure levels between diabetic/hypertensive patients with overweight or obesity and those with normal weight as well as the quantitative benefit on the achievement of treatment goals for the two conditions in patients in successful weight management programmes.

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Competing interests: The authors declare that they have no competing interest.

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