

OBESITY AND SYSTEMIC HYPERTENSION IN ACCRA COMMUNITIES

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SUMMARY

The study was carried out to determine the prevalence of obesity associated with systemic hypertension in four communities in Accra. A total of 598 persons, of whom 257 were male and 341 female aged 15 year and above were examined. Their blood pressure, weight, and height were measured; and from weight and height calculated the body mass index.

The results show that 22.6% were overweight (BMI 25-29kg/m²) and 17.2% were obese (BMI > 30kg/m²). Overweight/obesity increased with age peaking at age 55-64 years and then falling. Obesity was about twice as common in women than men. The prevalence of hypertension (BP > 140/90 mmHg) was 26.8%. There was a positive relationship between body mass and hypertension. In the study population the prevalence of hypertension was similar in males and females.

Keywords: Body mass, hypertension.

INTRODUCTION

The World Health Organisation has declared obesity as a global epidemic¹. In Europe more than half of the adult population is overweight or obese, and in the United States, the report suggests that approximately one-third of persons 20 years of age and above fall into this category. The prevalence of obesity also has increased in developing countries.

Obesity may be defined as an excess body fat content. All methods of measuring the fat content in living subjects are indirect. Body Mass Index (the body weight in kilograms divided by the square of the height in metres) is the preferred way of calculating obesity in clinical practice^{1,2}.

Obesity occurs when the calories intake exceeds the energy requirements of the body both for

physical activity and for growth. The increased prevalence of obesity has been attributed to genetic factors, sedentary lifestyle and readily available palatable, high-fat foods.

Sometimes cultural beliefs equate success with obesity. In groups in which great emphasis is placed on food, there is a tendency to overeat. In some societies fat men are respected and fat women considered beautiful.

Overweight is associated with an increased rate of mortality at all ages. This is primarily due to cardiovascular disease, hypertension, diabetes mellitus, gall bladder disease, and certain forms of cancer, for instance, endometrial cancer and postmenopausal breast cancer in women, prostate cancer in men, and colorectal cancer in both men and women.

In addition obesity significantly impairs the quality of life. Many obese individuals suffer pain and have restricted mobility because of mechanical disabilities. They experience low self-esteem, depression, emotional distress and other psychological problems because of social prejudices and discrimination.

On the other hand, the economic costs associated with obesity are substantial. These include both the direct cost of health care, and indirect cost associated with low productivity, caused by illness and disability.

Our experience in the hospital and the community shows that obesity is common in Ghanaians, and this is associated with other risk factors essential to the genesis of hypertension. Moreover we have noted certain tolerance and acceptance of obesity that may be attributed to the cultural and social patterns. Thirty years before our study Haddock had noted a high prevalence of obesity in medical

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out patients of the Korle Bu Teaching Hospital (KBTH); the prevalence of obesity was higher in hypertensives than normotensives³.

Under the terms of a technical assistance agreement between the Governments of Ghana and Cuba, a Cuban Health Brigade team undertakes clinical assignments in Ghana for periods of 2 years at a time. Each year the team holds a health week where these physicians are located and they pick on a theme for the purpose. During the 2-year duty tour of October 2000 – September 2002, a health week was held with Hypertension as the theme. The objective of this communication is to report on the study to determine the prevalence rates of hypertension and obesity in various communities in Greater Accra Region. Previous community studies had been in the Administrative Centre of Accra (Victoriaborg and Christianburg) and a suburb Mamprobi^{4,5}. Our study widened the scope of the spread of the population of Accra.

METHODOLOGY

The Population

Six communities, urban and semi urban in Accra, were randomly chosen. There was no census of the population taken but information was relayed to the communities of each locality through an identifiable traditional leader, concerning the impending exercise. Each day the survey field team moved from one location to the other, working between 0900 hours – 1500 hours. The blood pressures were taken by State Registered Nurses who had been trained in blood pressure (BP) measurement using standard methods. These nurses normally take the BP of the 60-80 patients a day, attending the cardiac and hypertension clinic of the National Cardiothoracic Centre in Accra. They also took the heights and the weights of the subjects.

Hypertension was defined as a BP of more than 140/90mmHg⁶ or a patient on anti-hypertensive therapy.

Overweight was defined as a BMI > 25kg/m² with sub-classification: Pre Obese BMI 25.0-29.9kg/m² and Obesity BMI > 30.0kg/m².

The statistical method used was the z-score for comparing two percentages.

RESULTS

Distribution of population x location x sex

There were 598 persons aged 15 years and above; consisting of 257 males (43%) and 341 females (57%). The communities studied were Teshie 58, 9.7%; Sakaman 124, 20.7%; Awoshie 118, 19.7%;

Oyinase 97, 16.2%; Dansoman 73, 12.2% and Mamprobi 128, 21.4%.

Distribution of categories of body mass index and prevalence of hypertension. Table 1.

The prevalence of hypertension thus increased significantly with body mass from 20.5% at BMI 18.5-24.9kg/m² (normal), to 42.7% at > 30kg/m² (obesity).

Table 1 Distribution of hypertension among categories of body mass index in both sexes

Body mass index	No. subjects	Percentage of selected population %	Prevalence of hypertension %
Underweight <18.5	23	3.8	1.75
Normal 18.5-24.9	337	56.4	20.5
Overweight 25-29.9	135	22.6	37.8
Obesity ≥30	103	17.2	42.7

Prevalence of hypertension, overweight and obesity x sex. Table 2

There was not much significant difference between males and females with respect to hypertension in the population, $p > 0.5$; Overweight was commoner in females than males but the difference was not statistically significant. Obesity was thrice as common in females than in males, the difference was highly significant, $p < 0.001$.

Prevalence of hypertension and overweight was equal in both sexes. However obesity was highly prevalent among females.

Prevalence of overweight and obesity in age groups. Table 3

Overall prevalence of overweight was 22.6% and of obesity 17.2%.

Thus there is a positive relationship between increasing age and the prevalence of overweight and obesity, though the prevalence of overweight peaked at 45-54 years whilst that of obesity peaked a decade later only to drop again after the age of 64 years.

Table 2 Prevalence of hypertension, overweight and obesity among males and females

	Males N=257 %	Fe- males N=341 %	Total N=598 %	P value
Hypertension >140/90mmHg	27.6	26.1	26.8	<0.5NS
Overweight (BMI 25.0- 29.9kg/m ²)	20.2	24.3	22.6	<0.5-0.3>
Obesity (BMI>30kg/m ²)	7.9	24.3	17.2	<0.001HS

NS=Not significant, HS=Highly significant

Table 3 Prevalence of overweight and obesity in age groups males and females together

Age in years	Over- weight 135 %	Obesity 103 %	Over- weight/obesity 238 %
15-34	19.0	12.2	31.2
35-44	22.3	16.8	39.1
45-54	30.3	20.5	50.8
55-64	20.8	31.3	25.1
65+	21.4	21.4	42.8
Total	22.6	17.2	39.8

DISCUSSION

The communities were randomly selected without any knowledge as to the behaviour of blood pressure and the prevalence rates of hypertension in those communities. It is conceded, however, that without knowledge of the denominator population, almost certainly, we cannot be positive about the representativeness of the sample with respect to the study population as a whole.

Obesity as defined was noted in 17.2% of our study population as compared to 6.2% by Nube et al⁷ and 5.7% and 7.4% amongst Civil Servants and Mamprobi residents respectively^{8,9}. The Ghanaian rates of obesity of 5.7-17.2% compare with 18.5% amongst citizens of the United Kingdom and 24.7% amongst the citizens of the United States of America¹.

The finding of the higher prevalence rates of overweight/obesity in females more than males, and the rising prevalence of body mass in both sexes with age are phenomena noted of other societies^{10,11}.

Hypertension

The prevalence of hypertension defined as a BP more than 140/90mmHg was noted in 26.8% of subjects of the communities. About that same time, a community study of Greater Accra, involving different communities from the current study, by Amoah, noted a rate of 28% in 4733 subjects¹². Earlier in 1975, Pobee had found amongst Mamprobi residents a rate of 25% in his 4703 subjects¹³. The prevalence rate of 26.8% in our communities compare with 26.6% noted in Kpando in the Volta Region and 32% in Zebilla in the Upper East Region¹⁴. Thus, with the caution indicated at the beginning of this discussion in mind, our study confirms the high prevalence rates of hypertension already noted in the Greater Accra Region. Previous studies reported above were about the Western and Eastern sub districts of Accra and at the very least, we have added other sub districts of Greater Accra Region.

Overweight/obesity and hypertension

That overweight/obesity is a risk factor for systemic hypertension is well documented in many societies, that we can only echo the saying attributed to Pickering, one of the giants in the field of hypertensionology: "The positive correlation (between body mass and blood pressure) has been so often as to leave room for no doubt"¹⁵. Indeed this relationship was first noted of Northern Americans by Terry in 1923¹⁶. Our finding of the positive relationship between body mass and hypertension in the community has confirmed Haddock's³ observation of patients attending the Korle Bu Teaching Hospital.

CONCLUSION

Our study shows that overweight/obesity is common in Ghana and that it rises with increasing age till the age of 65 years; and that overweight/obesity tended to be more common in females.

There was a high prevalence of hypertension in both sexes. There was a higher prevalence of hypertension in both sexes in the overweight/obesity than the normal weight persons in a ratio of 2:1. Thus obesity is a risk factor for hypertension.

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