

# Prevalence of Hypertension and Obesity among Women in Reproductive Age in the Ashaiman Municipality in the Greater Accra Region of Ghana

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## Abstract

Ghana like many other developing countries is faced with a double burden of infectious and chronic non-communicable diseases. It is increasingly being recognised that unhealthy behavioural patterns such as poor dietary habits, physical inactivity, smoking, and excessive alcohol consumption significantly contribute to the development of many chronic non-communicable diseases such as hypertension, obesity, stroke, type II diabetes and cardiovascular diseases. This study sought to determine the prevalence of hypertension and obesity among women in reproductive age ( $\geq 20 \leq 45$ ); describe the dietary habits of the women; and ascertain how this may contribute to hypertension and obesity among the respondents. A descriptive cross-sectional study using interviewer-administered questionnaires was carried out among 254 women in reproductive age in the Ashiaman municipality. Study participants were selected through systematic sampling. The weight (kg) of the participants was taken using Salter scale and the height was also measured in cm using a stadiometer. Both weight and height measurements were used to calculate participants' body mass index (BMI) and blood pressure (BP) readings were performed using a sphygmomanometer. The results showed that the prevalence rate of hypertension and obesity among the respondents was 20.1% and 9.8% respectively. The daily dietary choices of respondents revealed that all the respondents (254) consumed carbohydrates/fats & oils food daily with less than a third of the respondents (80) including vitamins and mineral rich food which are mainly fruits and vegetables into daily diet. The results also indicated that 20.5% women who consumed carbohydrates, fats & oils daily were hypertensive whereas the rest (79.5%) were normotensive. Effective and targeted health education and behaviour change interventions directed towards this segment of the population should be developed and implemented urgently.

**Key Words:** Hypertension, obesity, prevalence, dietary habit

## 1. Introduction

A significant contribution to an individual's health status can be attributed to a person's lifestyle choices including dietary habits, physical activity, alcohol consumption, smoking, and sexual activity. Unhealthy behavioural choices such as poor dietary habits, physical inactivity, smoking, and excessive alcohol consumption are major risk factors for obesity, hypertension, overweight, and other chronic non-communicable diseases (WHO/FAO, 2003; Steyn & Damasceno, 2006; Kruger *et al.*, 2005). It is now widely acknowledged that the epidemic of chronic disease is not only restricted to developed countries. Indeed, developing countries are increasingly suffering from high levels of public health problems related to chronic non-communicable diseases (WHO, 2005). The World Health Organisation reported that in five out of its six administrative regions, deaths caused by chronic diseases dominate the mortality statistics (WHO, 2002). A report by the same organisation similarly showed that only 20% of chronic disease deaths occur in high income countries – while 80% occur in low and middle income countries, where most of the world's population lives (WHO, 2005).

Ghana, like many other developing countries is confronted with a double burden of infectious and chronic non-communicable disease. Over the decades, there has been an ascendancy of Ghanaian adults population becoming overweight/obese and subsequently developing hypertension due to their changing lifestyles which include high fat diet, alcohol consumption, smoking, sedentary occupations and lack of exercise. The Ghana

Demographic and Health Surveys (DHS) reported that prevalence of obesity or overweight among adult (non-pregnant) women across the country increased 2.5 fold in ten years from 10% in 1993 to 25.3% in 2003 (GDHS, 2003). Additionally, the same report showed that there were more obese women (25.3%) than malnourished women (9%) in Ghana. In relation to hypertension, an alarming national prevalence of 28.7% has been reported (de-Graft Aikins, 2007). It has been reported that across the ten administrative regions of Ghana, hypertension ranks as the fifth commonest cause of outpatient morbidity (Bosu, 2010). Clearly, it is vital that the growing importance of chronic non-communicable disease is understood in order to develop more effective interventions to address this epidemic.

In addition to poor dietary habits, excessive alcohol consumption, and sedentary lifestyles contributing to the development of chronic diseases, other determinants such as age, occupation and literacy/illiteracy have also been linked with the likelihood of being overweight, obese and hypertensive. In relation to age, some studies have shown that older women are relatively more likely to be overweight and obese compared to younger women (Dhurandhar and Kulkarni, 1992; Agrawal, 2004; Thandi Puoane *et al.*, 2003). Further, working women were found to be almost two and a half times more likely to have hypertension with reference to non-working women (Agrawal, 2004).

Given the number of chronic diseases directly related to dietary habits, it is widely accepted that nutrition plays a vital role in promoting optimal health and enhancing the well-being. Against this backdrop, this study was undertaken to (1) determine the prevalence of obesity and hypertension among this age group (2) assess the dietary habits of women age 20 – 45 (3) and determine the influence of the dietary habits on obesity and hypertension.

## 2. Methods

A descriptive cross-sectional study was carried out at Ashaiman, a suburb of Tema Municipality in Greater Accra Region of Ghana. The sample selected consisted of 254 adult females between the ages of 20 and 45 years. The participants were recruited through systematic sampling technique. Data was collected through interviewer-administered questionnaire. In addition, the weight (kg) of the participants was taken using Salter scale and the height was also measured in cm using a stadiometer (an adjustable wooden board with an attached tape measure specifically designed to provide accurate measurement to the nearest 0.1cm). Both weight and height measurements were used to calculate participants' body mass index (BMI). Finally, blood pressure (BP) readings were performed using a sphygmomanometer. Each respondent who consented to the questionnaire-guided interview had her BP taken before and after the interview. An average of the two BP measurements was used.

## 3. Results

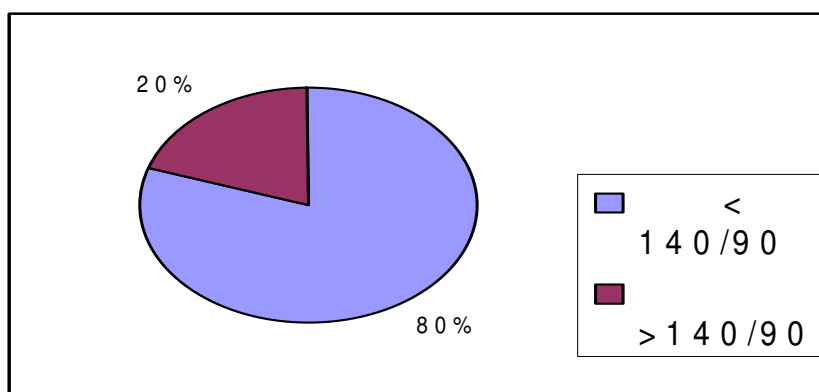
The total number of women who participated in the study was 254. Table 1 shows the profile of the study participants. Majority (46.5%) of the respondents were between the ages of 20 and 24 years. Most of the respondents had received some form of formal education and only a few of the respondents were unemployed at the time of the survey. Majority of the respondents (79.5% vs 46.9%) reported that neither parents, siblings nor any other member of their family had hypertension or obesity respectively.

### 3.1 Prevalence of Hypertension and Obesity

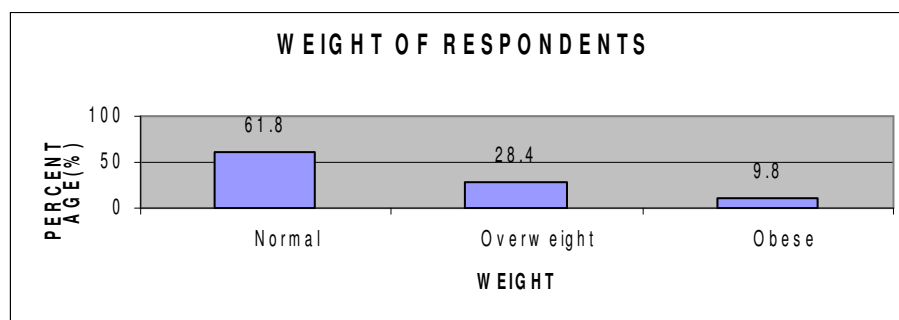
Results of the blood pressure measurement showed that 20.1% of the respondents recorded blood pressure reading of 140/90 mmHg and above. The rest of the respondents (79.9%) fell within the normotensive range. In relation to the BMI measurements, the study showed that 61.8% of the respondents were of normal weight (BMI of 18.5-24.9) whilst 28.4% were overweight (BMI of 25-29.9). Few of the women (9.8%) were deemed to be obese (BMI of  $\geq 30$ ). Figure 1 and 2 show the blood pressure and BMI distribution of the respondents respectively.

**Table 1: Characteristics of study participants**

Variable	No (%) of respondents
<b>Age (n=254)</b>	
20-24	118 (46.5)
25-29	58 (22.8)
30-34	30 (11.8)
35-39	23 (9.1)
≥40	25 (9.8)
<b>Level of Education (n=254)</b>	
Tertiary	6 (2.4)
Secondary	188 (74.0)
Basic	30 (11.8)
None	30 (11.8)
<b>Parity (n=254)</b>	
None	129 (50.8)
1-4	107 (42.1)
5-10	18 (7.1)
<b>Occupation (n=254)</b>	
Hairdressers	84 (33.1)
Traders	59 (23.2)
Seamstress	53 (20.9)
Caterers	18 (7.1)
Students	10 (3.9)
Unemployed	12 (4.7)
Other	16 (6.3)
<b>Familial Hypertension (n=254)</b>	
Parent(s)	22 (8.7)
Sibling(s)	1(0.4)
Both parents and siblings	11(4.3)
Other	18(7.1)
None	202(79.5)
<b>Familial Obesity (n=254)</b>	
Parent(s)	28(11.0)
Sibling(s)	14(5.5)
Both parents and siblings	17(6.7)
Other	76(29.9)
None	119(46.9)



**Figure 1: Blood pressure distribution of respondents**



**Figure 2: BMI distributions of respondents**

### 3.2 Distribution of Hypertension and Obesity by Socio-economic Characteristics

The results showed that respondents who were between the ages 20-24 years had the highest proportion of hypertension (8.7%). The highest proportion in relation to obesity (2.8%) fell in the 25-29 years age group. Secondary school attendants had the highest proportion for both hypertension (15.8%) and obesity (5.9%). Women with no children had the highest frequency for hypertension (9.1%) whereas those who had 1-4 children were more likely to be obese (6.3%). Christians had the highest frequency for both obesity (9.1%) and hypertension (18.5%). Respondents with a positive familial history for obesity had the highest proportion for that condition (8.3%) whereas those who had no familial history for hypertension had the highest proportion for the condition (15.4%).

**Table 2: Distribution of hypertension and obesity by socio-economic characteristics**

Variables	Hypertension (%)	Obesity (%)
<b>Age</b>		
20-24	22(8.7)	4(1.7)
25-29	10(4.0)	7(2.7)
30-34	5(2.0)	4(1.6)
35-39	7(2.8)	4(1.6)
40-44	7(2.8)	4(1.6)
45+	--	2(0.8)
<b>Educational level</b>		
Tertiary	2(0.8)	1(0.4)
Secondary	40(15.8)	15(5.9)
Basic	4(1.6)	6(2.4)
None	5(2.0)	3(1.2)
<b>Parity</b>		
5-10	6(2.4)	4(1.2)
1-4	20(7.9)	16(6.3)
None	23(9.1)	5(2.0)
<b>Religion</b>		
Christianity	47(18.5)	23(9.1)
Islam	3(1.2)	1(0.4)
<b>Familial History</b>		
Positive	12(4.7)	21(8.3)
Negative	39(15.4)	4(1.6)

### 3.3 Dietary Habits of the Respondents

Respondents were asked to indicate their dietary pattern in relation to what they consumed for breakfast, lunch, and supper. Data on respondents' snacking behaviour was also collected. The results showed that the respondents' diet consisted predominantly of carbohydrates with the occasional addition of protein and

vegetables. In relation to breakfast and lunch, porridge (54.7%) and Banku with okro stew/pepper (48.4%) recorded the highest proportion respectively.

**Table 3: Daily dietary habits of respondents**

<b>*Typical Breakfast (n=254)</b>	<b>Percentage (%)</b>
Porridge (oats, rice water)	54.7
Tea/Cocoa drink	36.2
Bread	45.3
Rice and Stew	23.6
Banku (a maize delicacy) with okro stew/pepper	25.6
<b>*Typical Lunch</b>	
Banku with okro stew/pepper	48.4
Rice with tomato stew	44.9
Kenkey (maize delicacy) with fish	29.1
Plantain/Yam with stew	18.1
<b>*Typical Supper</b>	
Rice and stew	32.7
Fufu (made from cassava and plantain) with soup	29.9
Fried rice (a fast food)	61.1
Yam/Plantain with stew	18.9
Jollof rice	13.4
<b>*Snack</b>	
Pastries (biscuits or meat pie)	41.3
Fruits	25.9
Bread	16.5
Ice cream	8.3
Chocolate & other sweets	7.9
<b>*Multiple response questions</b>	

### 3.4 Food Consumption Pattern

The study also sought to ascertain from respondents how often they included major food nutrients in their diets. Table 2 shows the distribution of their responses. The results showed that all the respondents (254) consumed carbohydrate foods daily whereas only 80/254 respondents reported including vitamin and mineral-rich food in their diet.

**Table 4: Consumption pattern of major food nutrients**

<b>Food Nutrients</b>	<b>Daily</b>	<b>1-3 times a week</b>	<b>≥4 times a week</b>	<b>Once a month</b>
Carbohydrate	254	0	0	0
Proteins	59	121	14	60
Fats and Oils	254	0	0	0
Vitamins and minerals	80	137	17	20

### 3.5 Influence of Carbohydrates/Protein on BMI Status

The distribution of BMI in relation to the intake of salts, alcohol and milk was specifically explored in this study. The results has shown that although all the respondents reported daily consumption of carbohydrates and fats & oils, 28.4% were found to be overweight (25-29.9) and 9.8% were obese, with a BMI of  $\geq 30$ .

**Table 5: Influence of carbohydrates/Protein on BMI status**

Body Mass Index	Carbohydrates/Fats & Oils	Protein (Milk & Meat)
Normal	157(61.8%)	44 (17.3%)
Overweight	72(28.4%)	19(7.5%)
Obese	25(9.8%)	10(3.9%)

### 3.6 Influence of Carbohydrates/Protein on Hypertensive Status

The association between hypertension and intake of carbohydrate/fats & oils and protein was determined. The results showed that 20.5% of the respondents who consumed carbohydrate and fats & oils were found to be hypertensive whereas 5.9% who consumed protein-rich food (milk and meat) were also found to be hypertensive.

**Table 6: Influence of carbohydrates/protein on hypertensive status**

Hypertension Status (mmHg)	Carbohydrate/Fats & Oils	Protein (Milk & Meat)
<140/90	202(79.5%)	57(22.4%)
$\geq 140/90$	52(20.5%)	15(5.9%)

## 4. Discussion

In this particular study, 20.1% of the respondents were found to be hypertensive whereas 28.8% of them were found to be overweight. These findings should be of concern to public health professionals in the light of the serious risks associated with being hypertensive and overweight such as stroke, cardiovascular diseases and type II diabetes. From the study, the prevalence rate of obesity among women between the ages of 20-45 years in Ashaiman was 9.8% which is higher than the national average of 7.5% reported by the World Health Organisation in 2008. Although this is lower than the prevalence rate of obesity in the Greater Accra region (46%) reported by the Ghana Demographic and Health Survey in 2003, this finding should still be taken seriously. It is also possible that the observation made by this study may be more prevalent in the larger population as a national prevalence rate of 28.7% of hypertension has been reported (de-Graft Aikins, 2007).

### 4.1 Influence of Demographic Variables on the Development of Hypertension and Obesity

From this survey, women between the ages of 25-29 years were more obese (2.8%) compared to women  $\geq 30$  years (Table 2). Further, women between 20-24 years were more likely to be hypertensive (8.7%) when compared to other age groups. This is similar to a study by August and Oparil (1999) on hypertension in women which documented lower blood pressures in younger, premenopausal women. In relation to educational level of the respondents, women who had attained formal education up to the secondary level were more likely to be hypertensive (15.8%) and obese (5.9%) than respondents who had no education (2.0%, 1.2% respectively) (Table 2). This is also supported by studies which establish that the BMI status of women with educational level

up to high school and above is about two and a half times higher with reference to illiterate women (Freitas *et al.*, 2001; Agrawal, 2004). This pattern of health experience has been attributed to increasing urbanisation, modernisation, affluence and changing lifestyles.

In this study, women who had no children were more likely to be hypertensive (9.1%) than those who had experienced childbirth (**Table 2**). Women who had 1-4 children were more obese (6.3%) than those who had none (2%). This is supported by a study among urban women in Mexico City (Arroyo *et al.*, 1995) which determined that parity and age increased the risk of being overweight especially at the low and middle socio-economic levels. In addition, women who had reported a familial predisposition to obesity (**Table 2**) were more obese (8.3%) compared to those who did not (1.6%). This is consistent with other studies which have reported an increased risk of obesity and positive family history (van der Sande *et al.*, 2001).

#### 4.2 Dietary Patterns and Risk of Obesity and Hypertension

In this particular study, it has been shown that the major food nutrients consumed by the respondents was predominantly carbohydrates/fats and oils with little or no inclusion of fruits and vegetables which has been widely documented to protect against the risk of cardiovascular diseases and other chronic non-communicable diseases. Several studies have documented a positive relationship between increasing carbohydrate/fats and oils intake and the prevalence of overweight/obesity and elevated blood pressure (Kokkinos *et al.*, 2002; Musaiger, 2004; Kantachuversiri, 2005). These findings should be a cause for concern for professionals working in health promotion and disease prevention in Ghana and elsewhere in sub-Saharan Africa.

#### 5.0 Conclusion

The study revealed that the prevalence rate of hypertension and obesity in Ashaiman, a municipality in the Greater Accra region of Ghana was 20.1% and 9.8% respectively. It was also evident from the study that most of the women who participated in this study did not enjoy a balanced diet as supported by the high level consumption of carbohydrate/fats & oil rich foods than fruits and vegetables which are healthier. These patterns of unhealthy dietary habits may be explained by the process of urbanisation, modernisation, and changing lifestyles which many developing countries are experiencing. The study also showed that demographic factors such as age, parity and educational level may be influential in the development of hypertension and overweight/obesity. However, because this study is descriptive cross-sectional in nature, any seemingly observed influence should be interpreted with caution. The results indicate that effective health education and behaviour change interventions that target this segment of the population needs to be developed and implemented urgently to improve their health-related knowledge and practices particularly in relation to dietary choices.

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