

Prevalence of obesity among health workers in Kadjebi District of Ghana

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Abstract

Overweight and obesity are excess body adiposity which is unhealthy. Globally, 35% of the adult population, 20 years and older, were overweight and 11% were obese in 2008 accounting for more than 1.4 billion adults with overweight. Healthcare workers are susceptible to being overweight because of the stress levels they experience at work and also the irregular hours during which they work.

We determine the prevalence of obesity among health care workers in the district, by conducting a cross-sectional study in March 2013 in all the health facilities in Kadjebi District. The study subjects were all the health workers in health facilities in the district.

About 158 health care workers (HCWs) participated in the study. Majority of the study participants 64.6% were from Mary Theresa Hospital. Most of the HCWs, 53.8% were females. The overall prevalence of overweight/obesity among the HCWs was 38.0% according to their BMI. The prevalence of overweight/obesity among females was 42.4% and 32.9% in males. Males were more physically active than their female colleagues. The prevalence of obesity among health care workers was higher than in the general population. However, additional studies with representative sample is needed. HCWs like any other person need information to control their body weight and maintain reasonable physical activity.

Key words: Ghana, Obesity, Overweight, Body Mass Index, Waist-Hip Ratio, Waist Circumference.

1. Introduction

Overweight and obesity result from accumulation of unhealthy excess body adipose tissue resulting from positive energy balance over an extended period of time. Apart from specific genetic disorders associated with overweight and obesity, recent epidemiological trends indicated environmental and behavioural changes are also responsible (World Health Organization 2013a). Obesity has currently assumed pandemic proportions globally, contributing to significant morbidity and mortality. It is a worldwide problem affecting both developed and developing countries. Globally, 35% of the adult population, 20 years and older, were overweight and 11% were obese in 2008 (World Health Organization 2013b) accounting for more than 1.4 billion adults with overweight including more than 200 million men and 300 million women obese in the world (World Health Organization 2013b)(International Association for the Study of Obesity on obesity prevention and policy 2013). Overweight and obesity are major risk factors for a number of chronic diseases, including diabetes, cardiovascular diseases and cancer (World Health Organization 2013c). Excess body weight is associated with cardiovascular disorders (Feldstein et al. 2005)(Björntorp 1992), Type 2 Diabetes (Wang et al. 2007)(Ning et al. 2009)(Dalton et al. 2003), dyslipidemia (Wyatt, Winters, and Dubbert 2006), metabolic syndrome (Björntorp 1992)(National Heart, Lung and Blood Institute 2013), cancer, osteoarthritis(Centers for Disease Control and Prevention 2013) and other disorders. Worldwide, at least 2.8 million people die each year as a result of being overweight or obese, and an estimated 35.8 million (2.3%) of global DALYs are caused by overweight or obesity (World Health Organization 2013c).

In the past obesity and chronic diseases were virtually unknown in African and researchers and policy makers concentration was on malnutrition and infectious diseases. However, in recent times, a sharp rise in the incidence of obesity and chronic diseases has been observed and recognized as a major public health problem in many countries in Africa (Asfaw 2006). This observation showed that, more than one-third of African women and a quarter of African men are estimated to be overweight, and the World Health Organization predicts that this will rise to 41 percent and 30 percent respectively in the next 10 years.

In Ghana, the crude prevalence of overweight and obesity determined by Amoah et al, were 23.4% and 14.1% for females and males, respectively among adults aged 25 years and above (Amoah 2007). Their findings showed that, the rates of overweight and obesity were both higher in women than men, increased with age up to 64 years and more prominent in the urban high-class residents. However, a World Health Survey on health status and health system responsiveness carried out in Ghana in 2003, found prevalence of obesity to be 5.5% and higher among females 7.4% compared to males 2.8% (Biritwum, Gyapong, and Mensah 2005). Their results showed obesity was more common among the married, employed and greatest in the Greater Accra (16.1%) and virtually absent in Upper East and Upper West regions of Ghana.

Health Care Workers (HCWs) are at the forefront of providing health information for promoting healthy lifestyles and maintaining healthy body weight to patients and the general public to ensure prevention of diseases. HCWs are also looked upon as knowledgeable and role models by their patients and also in communities they work. It would be believed that counselors would themselves live exemplary lives and use the information they provide to patients and the general public to maintain their own health. However, HCWs are usually concerned about taking care of others leading to the neglect of their own health. In addition, considering the irregular hours during which they work and the stress they experience at the work place may make them susceptible to overweight as well as obesity. In Ghana and as may also pertain in other African countries, lack of health manpower has made some health professionals to work for long hours continuously which may be detrimental to their health.

Physical activity reduces the risk of cardiovascular disease, some cancers and type 2 diabetes. Physical activity occurs across different areas of socioeconomic life. These include work, transport, domestic duties and during leisure. In high-income countries, most activity occurs during leisure time, while in low-income countries most activity occurs during work, chores or transport (World Health Organization 2009).

In Africa, there is paucity of data on obesity among HCWs, except in South Africa where a lot of studies had been done. In a study in South Africa among HCWs, 73% of the HCWs were overweight or obese, and half of them had never tried to lose weight. Females and older HCWs were more obese than men and younger counterparts.

We undertook this study to determine the prevalence of obesity among health workers in the district.

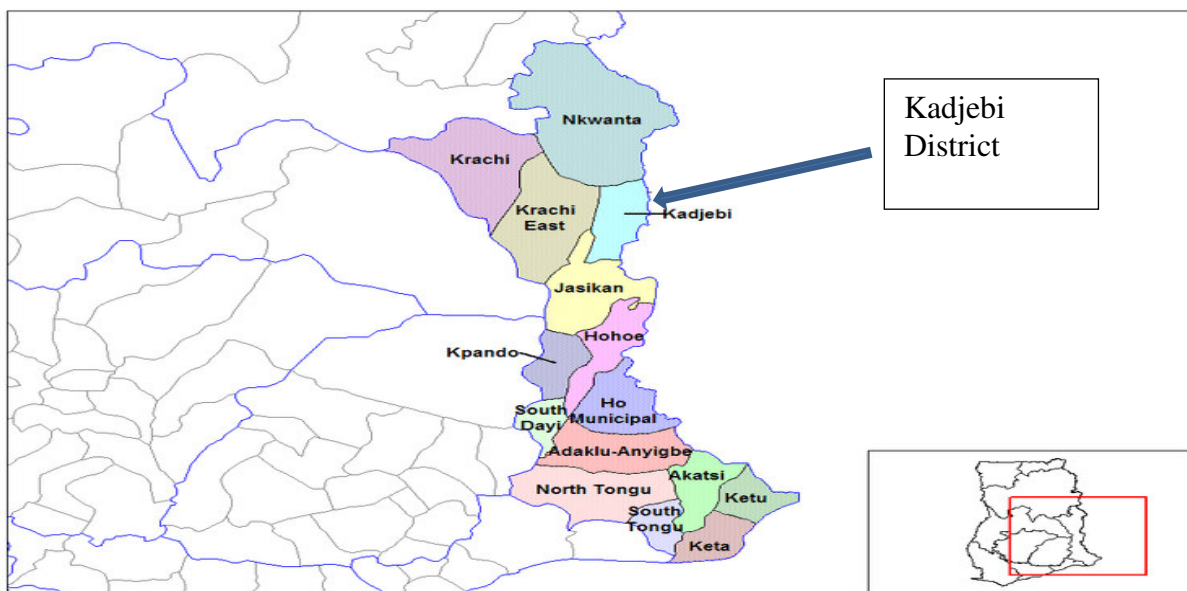
2. Methods

2.1 Study Area

Kadjebi District is one of the 25 administrative districts in the Volta Region of Ghana. It is located in the northern part of the Volta Region, occupying an area of 675sq km. The district shares boundaries with Jasikan, Nkwanta South and Biakoye Districts. Kadjebi District also shares boundary with Republic of Togo. The total population of the district was 63,595 (Kadjebi District Health Directorate 2013).

The district has a total of 11 health facilities consisting of one hospital, Mary Theresa Hospital which serves as the District Hospital, five Health Centres, five Community Based Health Planning and Services (CHPS) and one Maternity Home. These facilities were manned by a total of 212 health care workers of various categories.

Figure 1: Map of Kadjebi District



2.2 Study Design

We conducted a cross-sectional study in March 2013 in all the health facilities in Kadjebi District. The study subjects were all the health workers in health facilities in the district.

2.3 Data Collection

Four research assistants were trained to assist in data collection. All health workers were interviewed and their body weight, height, waist and hip circumferences and blood pressure were taken using standard protocols and calibrated instruments. The Data collected were recorded on a standardized spread sheet template. The waist circumference was measured at approximately the midpoint between the lower margin of the last palpable rib and the top of the iliac crest. The Hip circumference was measured at the widest portion of the buttocks.

2.4 Data Analysis

The data collected was transferred into standard excel spread sheet and read in Epi Info 7, cleaned and analyzed anonymously.

Excess body fat was determined using Body Mass Index (BMI) and Waist-to-Hip ratio (WHR). BMI was calculated as body weight (Kg) divided by height (m) squared ($BMI = \text{weight}/(\text{Height})^2$). BMI was categorized using body mass groupings recommended by WHO (Underweight, $BMI < 18.5 \text{ kg/m}^2$, Normal, $BMI = 18.5 - 24.9 \text{ kg/m}^2$; overweight, $BMI = 25 - 29.9 \text{ kg/m}^2$, and obese, $BMI > 30$). The waist circumference (WC) was considered for female as normal when $\leq 80 \text{ cm}$ and for males $WC \leq 90 \text{ cm}$. The WHR was calculated as WC divided by hip circumference ($WHR = \text{Waist}/\text{Hip}$). The WHR was classified for males as normal when $WHR \leq 0.9$ and for females, when $WHR \leq 0.85$.

The risk factor we considered was physical inactivity of the health care worker, which was measured by duration and frequency of exercise within a week. The duration of exercise was categorized into adequate and inadequate. The physical activity was adequate when exercise duration was ≥ 60 minutes and inadequate when < 60 minutes per day.

Blood Pressure (BP) was measured for study participants and the systolic BP considered normal when ≤ 140 mmHg and high when > 140 mmHg. For the diastolic BP, normal was ≤ 90 mmHg and high > 90 mmHg.

We determined the frequency of the characteristics of the HCWs and their BMI, WC, WHR, blood pressure and status with respect to diabetes. Bivariate analysis was done by exploring the relationship between the characteristics of the HCWs and BMI, WC and WHR.

2.5 Ethical Considerations

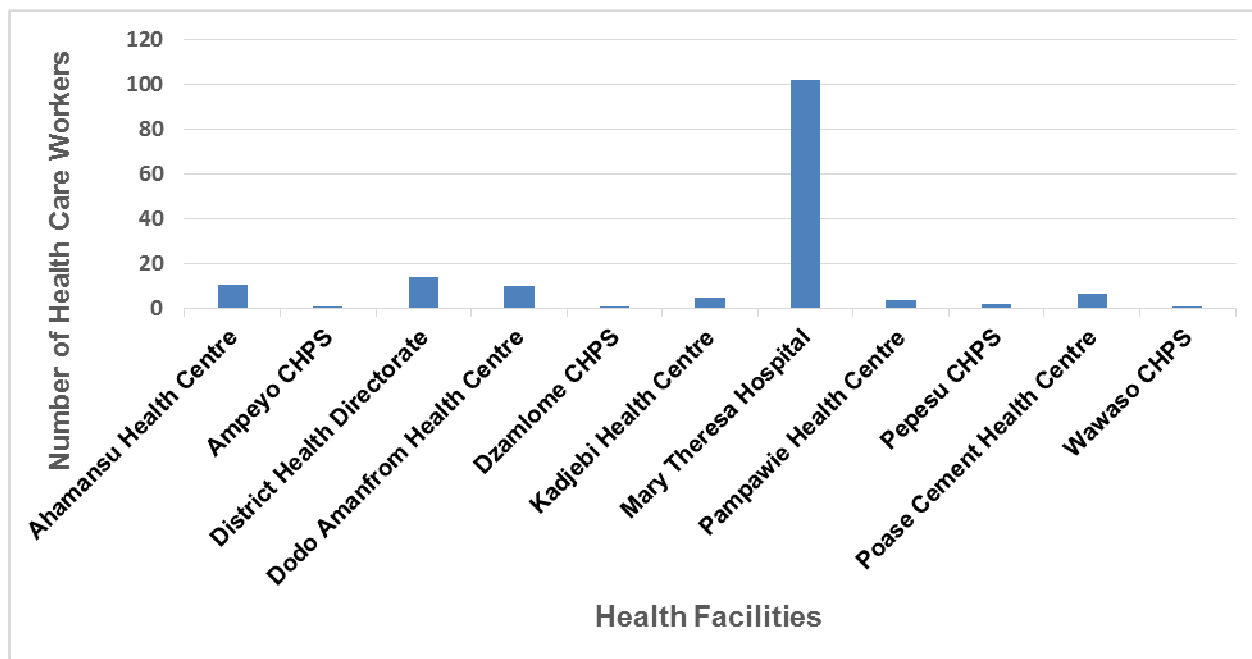
We obtained consent for the study from the District Health Management Team and the Medical Superintendent of the Mary Theresa Hospital. All the in-charges of health centres and CHPS zones were informed. We also obtained consent from individual health worker before enrolling them into the study. Health workers who were unwilling to participate in the study were excluded. Data was entered and analyzed anonymously.

3. Results

3.1 Demographical Characteristics of Health Care Workers

About 158 health care workers (HCWs) of various categories participated in the study out of the total 212 health care workers in the district. The rest were on their annual leave (35) or declined (19) participation in the study. Figure 2, shows the distribution of HCWs in the various health facilities who participated in the study. Majority of the study participants 64.6% were from the Mary Theresa Hospital, 23.4% were from various Health Centres in the district, 8.9% from the District Health Directorate and 3.2% from the CHPS zones.

Figure 2: The Distribution of Health Care Workers in Health Facilities in Kadjebi District in the Study



The health workers were made up of 62.0% clinical and 38.0% nonclinical staff. A large proportion of the HCWs were nurses (55.7%) of various categories, such as Community Health Nurses, General Nurses and Midwives. Supporting staff were 29.8% consisting of orderlies, Health Extension Workers and administrative staff. The prescribers who took part in the study were 2 (1.3%) consisting of a Medical Officer and Physician Assistant.

Figure 3: Distribution of Health Care Workers in Health Facility Types in Kadjebi District in the Study

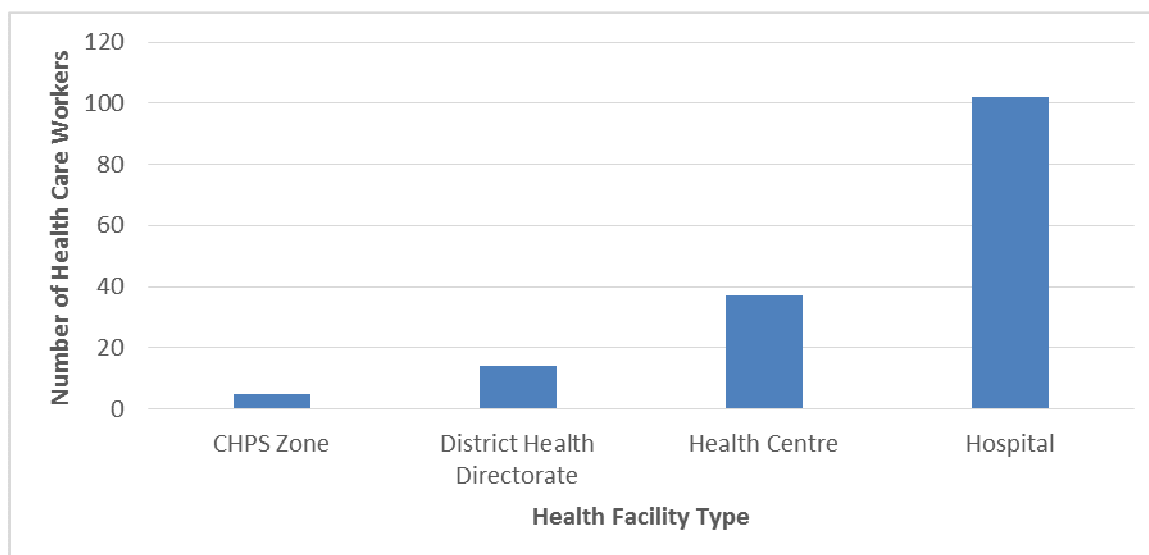


Figure 4: Distribution of Health Care Workers per their professional class in Kadjebi District

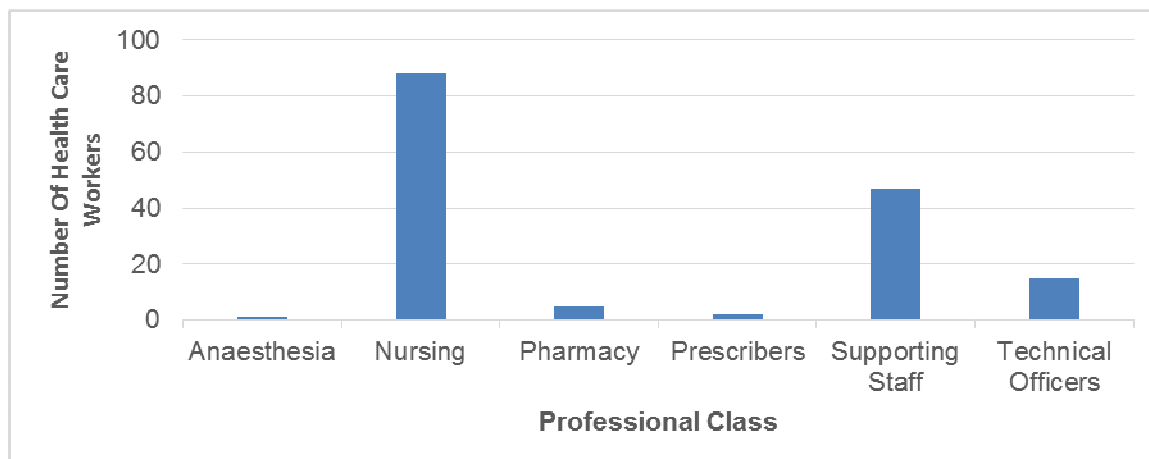


Figure 4, shows the various professional classes of HCWs working in the various facilities in Kadjebi District. Most of the HCWs, 53.8% were females and 46.2% were males. The overall mean age of the HCWs in the district was 34.4 years ranging between 19 and 59 years. The mean age of the males was 33.5 years ranging between 21 and 59 years and that of the females was 35.1 years ranging between 19 and 59 years. About 51.9% of the HCWs, were between the ages 20-29 years, 16.5% were between 50-59 years and only two of the health care workers were 19 years old.

Table 1 show the means of selected variables.

Table 1: Means of selected variables

| Characteristics | Males N=73 | Females N=85 | Total N=158 |
|---------------------|---------------|-----------------|----------------|
| Age | 33.5 | 35.1 | 34.4 |
| Body Weight | 68.9 | 64.0 | 66.2 |
| Height | 1.70 | 1.61 | 1.65 |
| BMI | 23.9 | 24.7 | 24.3 |
| Waist Circumference | 86.3 | 88.1 | 87.3 |
| Hip Circumference | 97.8 | 102.4 | 100.3 |
| Waist-Hip Ratio | 0.88 | 0.86 | 0.87 |
| Systolic BP | 115.3 | 114.1 | 114.6 |
| Diastolic BP | 75.0 | 72.0 | 73.4 |

**3.2
Prevalence of
Obesity among Health Care Workers**

3.2.1 Body Mass Index

In Table 2, is the distribution of various characteristics of the HCWs by sex. Most of the HCWs, 57.0% were of normal BMI, however, as much as 25.3% were overweight, 12.7% were obese and only 5.1% were underweight. The overall prevalence of overweight/obesity among the HCWs was 38.0%. The prevalence of overweight/obesity among females was 42.4% and 32.9% in males. The female HCWs therefore, were more obese than their counterpart males. The overall prevalence of overweight among the HCWs was 25.3% with 27.1% in females and 23.3% in males. In addition the overall prevalence of obesity of HCWs was 12.7% with 15.3% in females and 9.6% in males.

Table 2: Distribution of various characteristics of Health Care Workers by Sex in Kadjebi District

| Characteristics | Sex | | Total N=158(%) |
|-------------------------------|-----------------|-------------------|-------------------|
| | Male N=73(%) | Female N=85(%) | |
| Professional Class | | | |
| Anaesthesia | 1(1.4) | 0(0.0) | 1(0.6) |
| Nursing | 31(42.5) | 57(67.1) | 88(55.7) |
| Pharmacy | 2(2.7) | 3(3.5) | 5(3.5) |
| Prescribers | 2(2.7) | 0(0.0) | 2(1.3) |
| Supporting Staff | 24(32.9) | 23(27.1) | 47(29.8) |
| Technical Staff | 13(17.8) | 2(2.4) | 15(9.5) |
| Clinical Staff | | | |
| Yes | 39(53.4) | 59(69.4) | 98(62.0) |
| No | 34(46.6) | 26(30.6) | 60(38.0) |
| Age Group | | | |
| 19 | 0(0.0) | 2(2.4) | 2(1.3) |
| 20-29 | 37(50.7) | 45(52.9) | 82(51.9) |
| 30-39 | 19(26.0) | 9(10.6) | 28(17.7) |
| 40-49 | 8(11.0) | 12(14.1) | 20(12.7) |
| 50-59 | 9(12.3) | 17(20.0) | 26(16.5) |
| Body Mass Index (BMI) | | | |
| Under weight(<18.5) | 1(1.4) | 7(8.2) | 8(5.1) |
| Normal (18.5-24.9) | 48(65.8) | 42(49.4) | 90(57.0) |
| Overweight (25.0-29.9) | 17(23.3) | 23(27.1) | 40(25.3) |
| Obese (≥30) | 7(9.6) | 13(15.3) | 20(12.7) |
| Overweight/Obese(BMI) | | | |
| Yes | 24(32.9) | 36(42.4) | 60(38.0) |
| No | 49(67.1) | 49(57.7) | 98(62) |
| Waist Circumference/cm | | | |
| Normal | 58(79.4) | 26(30.6) | 84(53.2) |
| High (obese) | 15(20.6) | 59(69.4) | 74(46.8) |
| Waist-Hip Ratio | | | |
| Normal | 54(74.0) | 42(49.4) | 96(60.8) |
| High (obese) | 19(26.0) | 43(50.6) | 62(39.2) |
| Diabetes | | | |
| Yes | 1(1.4) | 4(4.7) | 5(3.2) |
| No | 72(98.6) | 81(95.3) | 153(96.8) |
| Hypertension | | | |
| Yes | 2(2.7) | 7(8.2) | 9(5.7) |
| No | 71(97.3) | 78(91.8) | 149(94.3) |
| Systolic BP/mmHg | | | |
| Normal | 71(97.3) | 79(92.9) | 150(94.9) |
| High | 2(2.7) | 6(7.1) | 8(5.1) |
| Diastolic BP/mmHg | | | |
| Normal | 67(91.8) | 80(94.1) | 147(93.0) |
| High | 6(8.2) | 5(5.9) | 11(7.0) |
| Exercise | | | |
| Yes | 57(78.1) | 49(57.6) | 106(67.1) |
| No | 16(21.9) | 36(42.4) | 52(32.9) |
| Exercise Duration | | | |
| Inadequate | 27(37.0) | 54(63.5) | 81(51.3) |
| adequate | 46(63.0) | 31(36.5) | 77(48.7) |

3.2.2 Waist Circumference

The cut-off point used for waist circumference (WC) for males was 90cm and 80cm for females. According to the WC, the overall prevalence of obesity (high WC above cut-off point for both males and females) was 46.8%

which was higher than 38.0% obtained using BMI. The sex specific prevalence of obesity for females was 69.4% whilst in the males, it was 20.6%. The sex specific prevalence of obesity in the females was three times that of males.

3.2.3 Waist-Hip Ratio (WHR)

The normal WHR used for males was ≤ 0.9 and for females ≤ 0.85 . The overall obesity among the HCWs was 39.2% according to WHR calculated. The sex specific prevalence of obesity according to the WHR was 50.6% for females and 26.0 for males. The prevalence of obesity was almost twice that for males. The overall prevalence of obesity with reference to WHR was lower than result obtained for WC but higher than that obtained with BMI.

3.2.4 Diabetes

HCWs were asked if they were known patient with diabetes or not. The overall prevalence of diabetes among the HCWs was 3.2%. The prevalence among the female HCWs (4.7%) was higher than that in Males (1.44%).

3.2.5 Hypertension

The prevalence of known hypertension among all the HCW was 5.7%. The prevalence of hypertension in females (8.2%) was thrice that of males (2.7%). The blood pressure (BP) of all the health staff that participated in the study were measured. The overall mean systolic BP for the HCW (Table 1) was 114.6mmHg, the mean for males was 115.3mmHg and that for females was 114.1mmHg. Prevalence of high systolic BP (≥ 140 mmHg) among the HCWs was 5.1% and the prevalence among the females was 7.1% which was more than twice that in males (2.7%).

The mean diastolic BP for all the health staff was 73.4mmHg. The mean in females was 72.0mmHg and that in males was 75.0mmHg. The overall prevalence of high diastolic BP (≥ 90 mmHg) among the HCWs was 7.0% with the prevalence among females being 5.9%, which was lower than 8.2% found in males.

3.2.6 Physical Activity

We determined the physical activity of the HCWs by asking them whether they exercise regularly or not, the number of days in the week they exercise and the duration of exercise episode. The HCWs who claimed they exercise regularly were 67.1%. Those who were not exercising were 32.9% consisting of 42.4% females and 21.9% males. More males (78.1%) than females (57.6%) undertook regular exercise. The duration of exercise per day was considered adequate when it was ≥ 60 minutes. The duration of physical activity was inadequate among 51.3% of the HCWs. More females (63.5%) than males (37.0%) had inadequate duration of physical activity.

3.3 Relation between characteristics of Health Care Workers and Obesity

3.3.1 Body Mass Index

With reference to Table 3, the prevalence of obesity was highest among HCWs working at District Health Directorate (28.6%) and the Hospital (8.1%). Female HCWs (15.3%) were more obese than their male counterparts (9.6%). The prevalence of obesity increases with age with highest prevalence occurring in the age group 40-49 years (40.0%). Among the HCWs professional groupings, the nonclinical staff (18.3%) were more obese than the clinical staff (9.2%). HCWs who were not exercising were comparably more obese than those who exercised. The prevalence of obesity among those who had inadequate exercise (14.8%) was more than those with adequate exercise. HCWs with high systolic and diastolic BP had high prevalence of obesity, 50.0% and 45.5% respectively than those with normal systolic and diastolic BP.

Table 3: The relationship between categories of Body Mass Index and characteristics of Health Care Workers in Kadjebi District

| Characteristics | Underweight ($<18.5\text{kg/m}^2$) N(%) | Normal ($18.5\text{-}24.9\text{kg/m}^2$) N(%) | Overweight ($25\text{-}29.9\text{kg/m}^2$) N(%) | Obese ($\geq 30\text{kg/m}^2$) N(%) |
|-----------------------------|---|---|---|---|
| Facility Type | | | | |
| CHPS Zone | 0(0.0) | 3(60.0) | 2(40.0) | 0(0.0) |
| District Health Directorate | 0(0.0) | 5(37.7) | 5(37.7) | 4(28.6) |
| Health Centre | 2(5.4) | 21(56.8) | 11(29.7) | 3(8.1) |
| Hospital | 6(5.9) | 61(59.8) | 22(21.6) | 13(12.8) |
| Sex | | | | |
| Female | 7(8.2) | 42(49.4) | 23(27.1) | 13(15.3) |
| Male | 19(1.4) | 48(65.8) | 17(23.3) | 7(9.6) |
| Age group | | | | |
| 19 | 0(0.0) | 1(50.0) | 1(50.0) | 0(0.0) |
| 20-29 | 5(6.1) | 56(68.3) | 13(15.9) | 8(9.8) |
| 30-39 | 0(0.0) | 17(60.7) | 7(25.0) | 4(14.3) |
| 40-49 | 1(5.0) | 7(35.0) | 8(40.0) | 4(40.0) |
| 50-59 | 2(7.7) | 9(34.6) | 11(42.3) | 4(15.4) |
| Clinical Staff | | | | |
| Yes | 7(7.1) | 56(26.5) | 26(26.5) | 9(9.2) |
| No | 1(1.7) | 34(56.7) | 14(23.3) | 11(18.3) |
| Exercise | | | | |
| Yes | 3(2.8) | 64(60.4) | 26(12.3) | 13(12.3) |
| No | 5(9.6) | 26(50.0) | 14(26.9) | 7(13.5) |
| Exercise Duration | | | | |
| Inadequate | 6(7.4) | 43(53.1) | 20(24.7) | 12(14.8) |
| Adequate | 2(2.6) | 47(61.0) | 20(26.0) | 8(10.4) |
| Systolic BP | | | | |
| Normal | 8(5.3) | 89(59.3) | 37(24.7) | 16(10.7) |
| High | 0(0.0) | 1(12.5%) | 3(37.5) | 4(50.0) |
| Diastolic BP | | | | |
| Normal | 8(5.4) | 88(59.9) | 36(24.5) | 15(10.2) |
| High | 0(0.0) | 2(18.2) | 4(36.4) | 5(45.5) |

3.3.2 Waist Circumference

The overall mean of the WC of the HCWs was 87.3cm, 86.3cm for males and 88.1 for females. The mean WC for the male HCWs was lower than 90cm and that of females were higher than 80cm used as the normal cut off point. In Table 4, a large proportion of males, 79.4% had normal WC, however only 30.6 % of the females had normal WC. Most of the female HCWs, 69.4% were obese according to their WC compared to only 20.6% of their male colleagues.

Table 4: The relationship between Waist Circumference of the Health Care Workers and their characteristics

| Characteristics | Waist Circumference (WC) | | | |
|--------------------------|--------------------------|------------------|----------------|------------------|
| | Normal | | High | |
| Age Group | Male (WC≤90cm) | Female (WC≤80cm) | Male (WC>90cm) | Female (WC>88cm) |
| 19 | 0(0.0) | 1(50.0) | 0(0.0) | 1(50.0) |
| 20-29 | 34(91.9) | 16(35.6) | 3(8.1) | 29(64.4) |
| 30-39 | 16(84.2) | 4(44.4) | 3(15.8) | 5(55.6) |
| 40-49 | 4(50.0) | 2(16.7) | 4(50.0) | 10(83.3) |
| 50-59 | 4(44.4) | 3(17.7) | 5(55.6) | 4(82.3) |
| Clinical Staff | | | | |
| Yes | 8(20.5) | 20(33.9) | 31(79.5) | 39(66.1) |
| No | 6(17.7) | 6(23.1) | 28(82.3) | 20(76.9) |
| Exercise | | | | |
| Yes | 46(80.7) | 17(34.7) | 11(19.3) | 32(65.3) |
| No | 12(75.0) | 9(25.0) | 4(25.0) | 27(75.0) |
| Exercise Duration | | | | |
| Inadequate | 20(74.1) | 14(25.9) | 7(25.9) | 40(74.1) |
| Adequate | 38(82.6) | 12(38.7) | 8(17.4) | 19(61.3) |
| Hypertension | | | | |
| Yes | 0(0.0) | 0(0.0) | 2(100.0) | 7(100.0) |
| No | 58(81.7) | 26(33.3) | 13(18.3) | 52(66.7) |
| Systolic BP | | | | |
| Normal | 58(81.7) | 26(32.9) | 13(18.3) | 53(67.1) |
| High | 0(0.0) | 0(0.0) | 2(100.0) | 6(100.0) |
| Diastolic BP | | | | |
| Normal | 56(83.6) | 26(32.5) | 11(16.4) | 54(67.5) |
| High | 2(33.3) | 0(0.0) | 4(66.7) | 5(100.0) |
| Diabetes | | | | |
| Yes | 1(100.0) | 1(25.0) | 0(0.0) | 3(75.0) |
| No | 57(79.2) | 25(30.9) | 15(20.8) | 56(69.1) |

Table 5 shows the relationship between the WC of the HCWs and their characteristics. According to WC, obesity among both sexes increases with age, and was highest among the age groups 40-49 and 50-59 years in both sexes. The proportion of the nonclinical staff who were obese were higher than that of clinical staff. About 82.3% of the males and 76.9% of the females were obese with respect to their WHR. Majority of the clinical staff had their WC higher than the normal with 79.5% of males and 69.1% of females obese.

About 57 of the males and 49 of the females said they exercise regularly. About 80.7% of the 57 males and 34.7% of the 49 females who exercise regularly had normal WC. Among the 16 males and 36 females who did not exercise regularly, 75% of the males and 25% of the females had normal WC. The physical activity of 46 males and 31 females were adequate. Among these HCWs, 82.6% of the males and only 17.4% of the females had normal WC. Out of the 27 males and 54 females who had inadequate exercise, 25.9% of the males and 74.1% of the females were obese.

Only nine of the HCWs, consisting of two males and seven females were known hypertensive and all of them were obese according to their WC. Eight of the HCWs who had high systolic BP, had WC greater than normal. Eleven of the HCWs made up of six males and five females had high diastolic BP. Out of these, two of the males had normal WC with the rest with high WC, while all the five females had WC greater than the normal. Only five of the HCWs said they had diabetes consisting of one male and four females. The only male had a normal WC, while three of the four had WC greater than normal.

3.3.4 Waist-Hip Ratio

The normal WHR used for males was ≤ 0.9 and ≤ 0.85 for females. Majority of the males HCWs, 74.0% and only 49.4% of the females had normal WHR. According to the WHR, 50.6% of the females and 26.0% of the males were obese.

In Table 1, the average WHR for male was 0.88 which was lower than normal. However, the average for females, 0.86 was higher than the cut-off point of 0.85. According WHR of both males and females as indicated in Table 6, obesity was highest in the age groups 20-29 and 30-39 years for both males and females. Out of the 98 HCWs who were clinical staff, consisting of 39 males and 59 females, 76.9% of the males and 52.5% of the females were obese. The proportion of nonclinical staff made up of 34 males and 16 females, which was obese were 70.6% males and 47.2% females. The clinical staff were more obese than the nonclinical staff.

Table 5: The relationship between Waist-Hip Ratio of Health Care Workers and their characteristics

| Characteristics | Waist-Hip Ratio (WHR) | | | |
|--------------------------|-----------------------|-------------------|----------------|-------------------|
| | Normal | | High | |
| Age Group | Male (WHR≤0.9) | Female (WHR≤0.85) | Male (WHR>0.9) | Female (WHR>0.85) |
| 19 | 0(0.0) | 1(50.0) | 0(0.0) | 1(50.0) |
| 20-29 | 7(18.9) | 17(37.8) | 30(81.1) | 28(62.2) |
| 30-39 | 4(21.1) | 3(33.3) | 15(79.0) | 6(66.7) |
| 40-49 | 3(37.5) | 7(58.3) | 5(62.5) | 5(41.7) |
| 50-59 | 5(55.6) | 15(88.2) | 4(44.4) | 2(11.8) |
| Clinical Staff | | | | |
| Yes | 30(76.9) | 31(52.5) | 9(23.1) | 28(47.5) |
| No | 24(70.6) | 11(42.3) | 10(29.4) | 15(57.7) |
| Exercise | | | | |
| Yes | 16(28.1) | 24(49.0) | 41(71.9) | 25(51.0) |
| No | 3(18.8) | 19(52.8) | 13(81.2) | 17(47.2) |
| Exercise Duration | | | | |
| Inadequate | 19(70.4) | 26(48.2) | 8(29.6) | 28(51.9) |
| Adequate | 35(76.1) | 16(51.6) | 11(23.9) | 15(48.4) |
| Hypertension | | | | |
| Yes | 1(50.0) | 1(14.3) | 1(50.0) | 6(85.7) |
| No | 53(74.7) | 41(52.6) | 18(25.4) | 37(47.4) |
| Systolic BP | | | | |
| Normal | 53(74.6) | 40(50.6) | 18(25.4) | 39(49.4) |
| High | 1(50.0) | 2(33.3) | 1(50.0) | 4(66.7) |
| Diastolic BP | | | | |
| Normal | 51(76.1) | 40(50.0) | 16(23.9) | 40(50.0) |
| High | 3(50.0) | 2(40.0) | 3(50.0) | 3(60.0) |
| Diabetes | | | | |
| Yes | 1(100.0) | 0(0.0) | 0(0.0) | 4(100.0) |
| No | 53(73.6) | 42(51.9) | 19(26.4) | 39(48.1) |

Among the HCWs who said they exercise, consisting of 57 males and 49 females, 76.1% of the males and 51.6% of the females were obese. Out of the 16 males and 36 females who did not exercise, 81.2% males and 47.2% females had high WHR. Twenty-seven of the males and 54 of the females had inadequate exercise and out of these 29.6% of the males and 51.9% of the females were obese. Compared to 46 males and 31 females who had adequate physical activity, less proportion of the males (23.9%) and females (48.4%) were obese. Out of the 158 HCWs, 9 were known hypertensive, comprising two males and seven females with majority of them obese including 50% of the males and 85.7% of the females. The HCWs who were unknown hypertensive, had 25.4% of the males and 47.4% of females obese compared to their counterparts who were known hypertensive. Almost all the males (71) except two had normal systolic BP with 25.4% with high WHR. Comparing them with their female colleagues, 6 out of 85 had high systolic BP with 66.7% obese. HCWs with high systolic BP were more obese and obesity was higher among the females. Out of the 158 HCWs, 67 males and 80 females had normal diastolic BP with 23.9% of the males and 50.0% of the females obese. Those HCWs with high diastolic BP made up of 6 males and 5 females, had 50.0% of the males and 60.0% of the females obese. Obesity among those with high diastolic BP was higher than those with normal diastolic BP. Only five of the HCWs were known to have diabetes, consisting of one male and four females. All the females were obese except the male.

4. Discussion

It is believed that Health Care Workers (HCWs) being promoters of healthy lifestyles, would themselves live by their own precepts. Ghanaians generally associate weight gain with wellbeing, success and beauty.

Westernization has also increase the preference of fried and fatty food than the traditional food that they were previously eating. Even though the cross-sectional study was not based on representative national sample of HCWs, the study provide a useful data on the prevalence of obesity.

The crude prevalence of overweight and obesity among HCWs in terms of BMI was 38.0% (Males, 32.9% and Females, 42.4%) was higher than the national crude prevalence found by Amoah et al and Biritwum et al (Amoah 2007)(Biritwum, Gyapong, and Mensah 2005). This may be explained by the fact that HCWs usually are concerned about the care of their patients to the neglect of their own health and the irregular and long hours they work. The females HCWs were more obese than their male counterparts which was consistent with many studies. However, in a study carried out on a group of healthcare workers employed in a large hospital in the province of Messina (Sicily, Italy), the prevalence of overweight and obesity among HCWs were more among men than females which was in contrast to our findings (Abbate et al. 2006).

Using the WC, the level of obesity among the HCWs became more marked, with overall obesity prevalence of 46.8%. The females (69.4%) were thrice more obese than their male (20.6%) counterparts. The WC is known to measure more accurately the central obesity with BMI measuring general body fat. In terms of the WHR the overall prevalence of obesity among the HCWs was 39.2% (Females, 50.6% and males 26.0%) with female almost twice as obese as males. In general the BMI, WC and WHR all indicated higher prevalence of obesity among females than males.

Among the HCWs, the nonclinical HCWs were more obese than their clinical colleagues. The clinical HCWs consists mainly of Nurses, Pharmacist, Physician Assistants and Doctors. In a study done in South Africa among HCWs, there was no difference between the medical and nonmedical staff in the distribution of their BMI (Skaal and Pengpid 2011).

5. Conclusion

The prevalence of obesity among health care workers was higher than in the general population. However, additional studies with representative sample is needed. Despite the above study revealed significant findings which merit mentioning. Across the parameters; BMI, WC and WHR computed for HCWs, prevalence of obesity was higher among females than males and increases with age in both sexes and prominent among the age group 40-49 years. We found nonclinical HCWs more obese than their clinical colleagues and obesity was marked among HCWs with known hypertension and diabetes. Physical inactivity and inadequate exercise were linked to obesity among HCWs. HCWs like others need information and support to leave a healthy life style, control their body weight and maintain reasonable physical activity to ensure their health.

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