



Designated by weights: Obesity among university employees



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ABSTRACT

The prevalence of underweight, overweight and obesity among employees of a University in Ghana were investigated (N = 1857). Multinomial logistic regression models were used to investigate the association between underweight, overweight and obesity, and potential risk factors. Body mass index (BMI) was calculated from two anthropometric measures (height and weight) which were measured during screening exercise and categorised as follows: underweight (BMI < 18), normal (BMI = 18–24), overweight (BMI = 25–29), obese (BMI = 30–39) and morbidly obese (BMI > 39). Of all staff, 6% were underweight while 44% were overweight/obese. Also, 47% of females and 43% of males were overweight/obese, respectively. By staff designation, 70% of Senior Members were overweight/obese while 50% and 37% of Senior and Junior Staff, respectively, were overweight/obese. After adjusting for potential confounders, Senior Members were more likely to be overweight (AOR = 2.8 CI = 1.9–4.1) or obese (AOR = 4.6 CI = 3.0–7.2) compared to Junior Staff. Similarly, Senior Staff had 1.6 times the risk of both overweight (CI = 1.3–2.1) and obesity (CI = 1.1–2.3) compared to Junior Staff. Being a female independently increased the chances of being obese (AOR = 2.2; CI = 1.6–3.1) than being a male. The findings suggest that the emerging epidemic of obesity in Ghana, as often reported, might be an underestimation of the situation among those in higher SES. Targeted obesity intervention among higher SES groups is necessary.

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1. Introduction

Obesity and its associated health consequences have become a major public health problem globally (McTigue et al., 2006; de Onis et al., 2010; Ng et al., 2014). Literature has shown that overweight and obesity are the fifth leading risk for global deaths (Stevens et al., 2012; Lim et al., 2013). Obesity is also known to contribute to many health outcomes, including ischaemic heart disease and cancer (McTigue et al., 2006; World Health Organization, 2013). The World Health Organization defines a person to be overweight if her or his body mass index (BMI) is >25, and obese if BMI is ≥30 (World Health Organization, 2000). There is a vast literature on malnutrition in general and obesity and underweight in particular. Nonetheless, the increasing trend of the phenomenon in developing countries and the fact that it still remains a major health issue in developed countries despite the long standing efforts (Ng et al., 2014) warrants a constant monitoring in order to inform policy and interventions. Literature on the phenomenon in the developing

countries is also mounting. According to Abubakari, Lauder, Agyemang, Jones, Kirk and Bhopal (Abubakari et al., 2008) the prevalence of obesity in West Africa between 2000 and 2004, indicates that about 10% of West African were said to be obese. In a study using data collected between 2006 and 2014, Neupane, KC and Doku (Neupane et al., 2016) reported a polled prevalence of 15% from 32 Sub-Saharan African countries. Thus the estimates continue to increase considerably over the years (Ng et al., 2014; Neupane et al., 2016).

There has been extensive debate regarding factors that are associated with obesity. It is almost conclusive that overweight and obesity are as a result of energy imbalance between calories consumption and what is equivalently expended in physical activities. The discussion of weight (underweight, overweight and obesity) in developing countries is often premised on the changing economic and technological development as well as the distribution of wealth and material resources (Duda et al., 2007). Westernization and Urbanization is said to be the reason for this energy imbalance in West Africa and it is viewed from two perspectives. Urbanization and westernization have led to decreased physical activity on one hand and increased food supply, which include access to high

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caloric fast foods and sugar sweetened beverages (fatty foods) on the other hand (Duda et al., 2007; Popkin et al., 2012). Furthermore, several previous studies have found gradient in overweight and obesity by socioeconomic status (SES) (Monteiro et al., 2004; Wang and Beydoun, 2007; Dinsa et al., 2012; Doku and Neupane, 2015). In developing countries, the SES differences in obesity and overweight were found to the detriment of people with high SES (Dinsa et al., 2012). In developed countries, on the other hand, obesity is lower among persons with higher SES compared to those with lower SES for both men and women (Wang and Beydoun, 2007; Dinsa et al., 2012). Although a handful of studies too did not find any relationship between BMI and SES, for example, Bergh, Skare, Aase, Klepp, Lien (Bergh et al., 2015). In the United States of America, for instance, a meta-analysis of the disparities in age, gender, SES, racial/ethnic groups, and geographic regions revealed that minority and lower socioeconomic groups were disproportionately affected by the obesity epidemic (Wang and Beydoun, 2007).

In Ghana, between 2008 and 2014, the Demographic and Health Surveys, the most reliable nationwide survey on the outcome, indicated that the percentage of women aged 15–49 who were overweight or obese grew from 30% to 40% and the highest prevalence (49%) was reported among women in urban communities (Ghana Statistical Service, 2009; Ghana Statistical Service, 2014). Also previous studies have reported positive association between SES and overweight or obesity in Ghana (Doku and Neupane, 2015; Amoah, 2003) consistent with those reported from other African countries (Ng et al., 2014; Neupane et al., 2016; Maruf and Udoji, 2015). Apart from data from the Ghana Demographic and Health Surveys, most population specific studies conducted in Ghana on overweight and obesity in the past one and half decades have used small sample sizes and height and weight measure were usually self-reported without any objective anthropometric measurements. As a result, validity and generalisability of these studies limit their contribution to the debate on the subject. Our knowledge is therefore limited in understanding the dynamics of the phenomenon. The question regarding why obesity is higher among persons with higher SES in developing countries, including Ghana, therefore still remains unanswered. Of particular interest is why in developing countries the association between SES and overweight or obesity is positive but in developed countries the reverse is found. This study explored how underweight, overweight and obesity are distributed among employees of a University in Ghana and discussed the implications for the rising epidemic in the country. It is hypothesised that given that all the respondents were in stable employment and the fact that all the employees were literate, overweight and obesity may be lower than those found in the Ghanaian population while underweight will be lower or non-existing. Furthermore, it is expected that no SES differences in overweight or obesity will be found in this population or at least there will be negative association between SES and overweight or obesity, if SES differences exist.

2. Method

Data were collected during the annual medical screening of the staff of the University (N = 1857). The annual medical screening is usually a week-long programme which screens for high blood pressure, prostate cancer, breast cancer, eye problems as well as general medical check-ups. Data were also collected on age, gender, height, blood sugar level, urine sugar, urine protein and weight. The screening exercise was advertised through letters sent to all staff via the various smallest units i.e. Departments, Centres, Institutes as well as on the university's radio station. All staff were encouraged to attend, although it was completely voluntary. The exercise was conducted by the staff of the University Hospital. Data for the

present study were collected in July 2013 (response rate = 36%). Approval for the screening exercise and the use of that data were given by Management of the University Health Services.

Body mass index (BMI) was calculated from two anthropometric measures (height and weight) which were measured during the screening exercise. Weights of respondents were divided by the height in square metres (kg/m^2) and categorised as follows: underweight (BMI < 18), normal (BMI = 18–24), overweight (BMI = 25–29), obese (BMI = 30–39) and morbidly obese (BMI > 39). The independent variables used in the analysis were age, gender, staff designation (a measure of socioeconomic status) and work experience. Information on age was collected using open ended questions and later categorised for the logistic regression analysis into three order to ensure sufficient cases in each category.

Staff designation was measured in three categories in accordance with the categories of staff in Public Universities in Ghana, namely, Junior Staff (N = 2877), Senior Staff (N = 1479) and Senior Member (835). In the university community staff designation correlates with salary and level of education. Junior Staff (salary scale 5–15L) were those who had non tertiary level education. This category of staff includes cleaners, drivers, messengers and some categories of security guards. Senior Staff (salary scale 16L–20H) were those with university first degree. They include administrative assistants, research assistants and audit and account assistants. Senior Members (salary scale 20H–25L) were those with university second degree which involved at least two years of studies and included research component, that is Master of Science (MSc.) degree, Master of Arts (MA) degree or Master of Philosophy (MPhil) degree or a first degree plus a professional diploma such as those from accredited professional bodies. Senior Members of the university include, lawyers, accountants, lecturers (all categories including professors) and researchers.

3. Statistical analysis

Descriptive analysis of the background variables are presented in Table 1. Multivariable multinomial logistic regression analysis was used to model the relationship between potential risk factors (age, gender, staff designation and work experience) and being underweight, overweight, obese or morbidly obese. Staff designation refers to rank of the worker. The significance of the relationships was tested with 95% confidence interval (95% CI) and the analyses were presented as adjusted odds ratios (AORs). The analyses were conducted using STATA 14.

4. Results

More than half of the respondents were in their middle ages (30–49 years), Table 1. Two-thirds of the respondents were males and two persons did not indicate their sex. Majority (59%) of the respondents who took part in the screening were junior staff (those without tertiary education). In terms of working experience, those with less than 5 years of working experience constituted the largest proportion (43%) and staff who have been working for more than 15 years (13%) constituted the smallest proportion. Among all the categories of the staff, 6% were underweight (BMI < 18) while 44% were overweight (BMI = 25–29), obese (BMI = 30–39) or morbidly obese (BMI > 39) (Table 1). The prevalence of overweight or obesity among females was 47% while that among males was 43%. By staff designation, 70% of Senior Members were overweight or obese and 50% and 37% of Senior and Junior Staff, respectively, were overweight or obese.

Multivariable multinomial logistic regression analysis shows that females were more likely to be obese (AOR = 1.9 CI = 1.4–2.7) compared to males (Table 2). The most remarkable gradient in

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