

ORIGINAL ARTICLE IN PUBLIC HEALTH

Body size estimation and weight management practices in urban poor communities in Ghana: A cross-sectional study.

Grace Agyemang FREMPONG¹, John K. ANARFI¹ Delali Margaret BADASU¹, Samuel Nii Ardey CODJOE¹

Affiliations:

¹Ph.D, Regional Institute for Population Studies, University of Ghana, P.O. Box LG 96, Accra, Ghana.

Corresponding author:

Grace Agyemang Frempong, Regional Institute for Population Studies, University of Ghana, P.O. Box LG 96, Accra, Ghana. E-mail: gracea72@gmail.com

Abstract

Introduction: Body size perception is a pertinent issue globally due to its implications for weight management. This study examined the influence of body size estimation on weight management behaviours in urban poor areas of Ghana.

Methods: A cross-sectional design was used to collect data among a sample of 395 adults aged 18-70 years. A semi-structured questionnaire was designed for collection of data on socio-demographic characteristics, weight perceptions, and weight management strategies. Anthropometric measurements were also taken, using standard procedures. Logistic regression models were used to examine relationships among the variables.

Results: More than half (57%) of the total sample was overweight or obese and 56.7% of the participants accurately estimated their body size. Nearly a third (37%) of the participants intended to stay about the same weight, while 29.6% and 11.9% wanted to lose or gain weight, respectively. To achieve their weight management goals, 60.3% of the participants engaged in healthy weight management practices. Body size estimation had no statistically significant relationship with weight management practices. However, the likelihood of engaging in healthy

practices increased as age increased (OR = 1.021; 95% CI: 1.000 to 1.042). Individuals who belonged to households of upper wealth category were less likely than those in lower wealth households to engage in healthy practices (OR = 0.548; CI: 0.330 to 0.911). Community of residence, a community conducive to physical activity and social support also significantly predicted weight management practices.

Conclusion: The findings of this study highlight the importance of age and some socio-environmental factors in public health strategies for weight management.

KEYWORDS: Body size estimation; diet; Ghana; healthy practice; obesity; weight management.

Riassunto

Introduzione: La percezione della dimensione del proprio corpo è un tema rilevante a livello globale per le sue implicazioni sulla gestione del peso. Questo studio ha esaminato l'influenza della stima del peso corporeo sui comportamenti relativi alla gestione del peso in aree urbane povere del Ghana.

Metodi: Un disegno di studio trasversale è stato utilizzato per raccogliere dati da un campione di 395 adulti di età compresa tra 18 e 70 anni. Un questionario semi-strutturato è stato progettato per raccogliere dati su caratteristiche socio-demografiche, percezione del peso e strategie di gestione del peso. Misure antropometriche sono state calcolate attraverso procedure standard. Modelli di regressione logistica sono stati usati per esaminare le relazioni tra variabili.

Risultati: Più di metà del campione totale (57%) era in sovrappeso o obeso ed il 56,7% dei partecipanti ha stimato in modo accurato la propria dimensione corporea. Circa un terzo dei partecipanti aveva intenzione di mantenere lo stesso peso, mentre il 29,6% e l'11,9% voleva

rispettivamente perdere o guadagnare peso. Per raggiungere i loro obiettivi di gestione del peso, il 60.3% dei partecipanti si è impegnato in pratiche salutari di gestione del peso. La stima della dimensione del proprio corpo non ha avuto una relazione statisticamente significativa con le pratiche di gestione del peso. Tuttavia, la possibilità di impegnarsi in pratiche salutari incrementava con l'aumentare dell'età (OR = 1.021; IC95%: 1.000-1.042). Gli individui che appartenevano a famiglie di categorie benestanti erano meno propense di quelli poveri ad impegnarsi in pratiche salutari (OR = 0.548; IC95%: 0.330-0.911). Il comune di residenza, una comunità favorevole all'attività fisica ed al supporto sociale hanno predetto in modo significativo le pratiche di gestione del peso.

Conclusion: I risultati di questo studio hanno evidenziato l'importanza dell'età e di alcuni fattori sociali ed ambientali nelle strategie di salute pubblica per la gestione del peso.

TAKE HOME MESSAGE: Socio-environmental factors are key factors to promote effective public health strategies for weight management practices among urban poor residents in Ghana.

Competing interests: none declared

Copyright © 2020 Grace Agyemang Frempong et al.

Edizioni FS Publishers

This is an open access article distributed under the Creative Commons Attribution (CC BY 4.0) License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited. See <http://www.creativecommons.org/licenses/by/4.0/>.

Cite this article as: Frempong GA, Anarfi JK, Badasu DM, Codjoe SNA. Body size estimation and weight management practices in urban poor communities in Ghana: A cross-sectional study. [published online ahead of print September 30, 2020]. *J Health Soc Sci*. doi10.19204/2020/bdys5

DOI 10.19204/2020/bdys5

Received: 30 June 2020

Accepted: 21 September 2020

Published Online: 30 September 2020

INTRODUCTION

Obesity constitutes one of the major public health challenges worldwide [1], as it is a risk factor for cardiovascular diseases, type 2 diabetes, cancer and disability, which are the leading causes

of death globally [2]. A systematic review by Agyemang et al [3] on obesity in sub-Saharan Africa (SSA) indicates that obesity prevalence in West Africa increased from 2.6 percent in 1990 to 7 percent in 2015. The results from the 2014 Ghana Demographic and Health Survey (GDHS) indicate that prevalence of overweight and obesity is high in Ghana's population, being 40 percent for females and 16 percent for males [4]. An increasing prevalence of obesity in urban areas, particularly among the poor has also been observed in sub-Saharan Africa (SSA) [5]. The poor are more vulnerable to under-nutrition and over-nutrition, and thus, are further pushed into extreme poverty. This consequently impacts negatively on their weight management practices, particularly on eating a healthy diet [6]. The rise in the prevalence of obesity in the developing world is a result of rapid urbanisation, globalisation and industrialisation accompanied by a nutritional transition [7]. Increasingly, the urban food environment in sub-Saharan Africa is becoming more energy dense and, thus, creating an obesogenic environment [8]. In addition, body image perceptions and preferences have been reported to contribute to the increasing incidence of obesity [9, 10]. Body image perception is a multi-dimensional subject that incorporates an individual's thoughts, perceptions and feelings about his or her body [11]. It may be considered the accuracy of body size estimation or a feeling of satisfaction or dissatisfaction towards one's body [11]. Accurate body size estimation is considered a component of effective behaviour change and a greater motivation towards weight management [10, 12]. However, incorrect body size estimation has been reported to be associated with engagement in unhealthy weight management practices such as skipping meals, taking diet pills and consumption of fatty and sugary foods [13, 14].

While research on body size perception and weight management are far advanced elsewhere [15–17], the nexus between them has received very little attention in sub-Saharan African countries, including Ghana. Additionally, available studies on obesity in SSA have focused mainly on its prevalence and predictors. Thus, there is a dearth of information on weight management practices and related factors in Ghana. Understanding these factors might provide public health strategies to help curb the obesity problem and related chronic non-communicable diseases and mortality in Ghana and elsewhere in the region. Against this background, this study examined the relationship between body size estimation and weight management practices in urban poor settings in Ghana.

METHODS

Study sites

This study was conducted in Jamestown and Ussher Town, which are urban poor communities and are located in Accra, the capital town of Ghana. The sites are a twin community and together are known as Ga Mashie. Ga Mashie is a traditional community dominated by the indigenous Ga ethnic group. It is organised around strong traditional, social and kinship systems. Both communities are characterized by multiple generations of families residing in large family houses [18]. Ga Mashie is a densely populated area formally labelled as urban poor community. The communities are characterised by poor housing structures, poor environmental sanitation, limited financial access to health care services and quality education [19]. Other characteristics of the Ga Mashie population include high levels of obesity and a double burden of infections and chronic non-communicable diseases [20].

Study design and procedure

The study employed a cross-sectional approach, including quantitative evaluation of individual perceptions of body size and weight management practices. Data was collected from November to December 2016. The study participants included men and women aged 18 to 70 years, based on a sampling frame designed by the Ghana Statistical Service for the Ghana Demographic and Health Surveys. Individuals living in the communities for more than six months were included in the study. Women who were either pregnant or lactating for less than six months were excluded because pregnancy and lactating may cause weight gain and weight loss respectively, and thus introduce bias in the computation of their body mass index. The study sample was drawn from 24 enumeration areas (Jamestown had eight EAs while Ussher Town had sixteen), consisting of 2,769 households. Using a random number table, 305 households were selected. A total of 401 individuals who were eligible and willing to participate were recruited to participate from the selected households. A semi-structured questionnaire with sections on socio-demographic characteristics, body size perceptions and weight management was administered to the participants, in Ga and Twi languages and in English.

Study instruments and measures

The outcome variable of this study were the weight management practices. Seven questions were used to assess them: (1) Intake of more fruits and vegetables; (2) Consumption of less fatty and less sugary foods; (3) Increasing physical activity; (4) Skipping meals; (5) Taking diet pills; (6) Consumption of high fatty and sugary foods; and (7) Decreasing physical activity. The participants could choose as many options as are applicable to them. Practices such as intake of fruits and vegetables, consumption of less fatty and sugary foods and increased physical activity were considered healthy whereas skipping meals, taking diet pills, consumption of high fatty and

sugary foods, and decreased physical activity were classified as unhealthy practices [21, 22]. Based on the classification, the responses were codified numerically with a score of 1 for a 'Yes' answer (to any of the healthy practices) or a score of 0 for a 'No' answer. On the opposite, a 'Yes' to an unhealthy practice was scored as '0' and 'No' as '1'. A scale ranging from 1 to 7 was developed by summing up all the responses for each individual. The median was used as the cut-off point. Thus, respondents who scored below the median were classified as engaging in 'poor healthy practices', while those who scored above the median were classified in the 'good healthy practices' category. Body size estimation was the main independent variable for this study. This variable is derived from participants' perceived and actual body size. Perceived body size was assessed using the '*Figural Stimuli*' tool, which was developed by Pulvers et al [23] (Appendix 1). This figure rating scale measure was selected for our study because it correlates very well with the standard World Health Organisation's BMI values. There are nine silhouettes that present sex-specific body sizes, ranging from a BMI of 16 to 40 with constant increments of 3 kg/m². Actual body size was measured by using Body Mass Index (BMI). BMI is a measure of an individual's weight and height and is calculated by dividing a person's weight in kilograms by the square of his/her height in metres (kg/m²) [24]. Weight and height measurements of participants were taken by trained officers. Height measurements were taken using a measuring tape (5 M/16FT measuring tape) in centimetres (cm) after removal of slippers or shoes, with participants standing upright in the Frankfort horizontal position. Weight was also recorded to the nearest 0.1 kg using a calibrated Seca scale with participants dressed in light clothing. The weight and height measures were used to calculate the BMI of the participants. BMI was categorised as: Underweight (< 18.50 kg/m²); Normal weight (18.50 kg/m²- 24.99 kg/m²);

Overweight (25.00 kg/m²- 29.99 kg/m²) and Obese (\geq 30.00 kg/m²). In the computation of body size estimation, perceived and actual body size were coded numerically (0 = underweight; 1 = normal weight; 2 = overweight and 3 = obese, respectively). The difference between the values of perceived and actual body size was then calculated: a score of zero indicated an accurate estimation of body size while scores deviating from zero indicated inaccurate estimation of body size. This was further categorised as underestimation (negative scores) and overestimation (positive scores). Participants with an underestimated body size viewed themselves as thinner than they are, whereas those with an overestimated body size viewed themselves as bigger than their actual body mass index.

Weight management goals of the participants were also assessed based on the question: “During the past 12 months, what have you been trying to do about your body weight”? [25]. Response choices included ‘lose weight’, ‘gain weight’, ‘stay about the same weight’, ‘do nothing’.

The socio-demographic characteristics of the participants included gender (male, female), age groups (< 30 years, 30-39 years, 40-49 years, 50-59 years, 60 years and above), educational attainment (no education, primary, junior high, secondary and above), marital status (never married, married/cohabiting, formerly married). The formerly married were those who were separated, divorced or widowed. Environmental variables such as community of residence (Jamestown, Ussher Town), household wealth status (poor, middle, rich), community conduciveness to physical activity (very conducive, somewhat conducive, not conducive) and perceived social support were also included. Sallis et al.’s [26] validated scale examining social support for diet and exercise was adopted to assess social support from family, friends and health workers. Each measure has a 5-point Likert scale (1 = none, 2 = rarely, 3 = a few times, 4 =

often, 5 = very often) which determines the frequency of social support provided by significant others (family, friends and health workers). Five items were summed up to generate a composite score, indicating 'encouragement' to eat healthy diet. These items were: "They encouraged me not to eat unhealthy foods"; "They discussed my eating habit changes with me"; "They reminded me not to eat high fat, high salt foods"; "They complimented me on changing my eating habits", and "They commented if I went back to my old eating habits". Social support for exercise was also measured by summing up the following items: "They exercised with me"; "They gave me helpful reminders to exercise"; "They discussed exercise with me"; "They talked about how much they like to exercise" to create a composite score representing the 'participation' level.

Ethical aspects

The study received ethical approval from the Ethics Committee for Humanities (ECH), University of Ghana on September 12, 2016 (ECH014/16-17). Before participating in the study, the protocol of the study was explained to the participants. They were assured that the information they provide would be treated confidentially and they could withdraw from the study at any time without facing any consequences.

Data analysis

Descriptive statistics, including frequencies and percentages were used to examine the distribution of the characteristics of the participants. Bivariate test of association (Chi-square test) and logistic regression models were employed to assess the association among the variables of interest. Two models were used in assessing the relationship between body size estimation and weight management practices. The first model expressed the independent relationship between body size estimation and weight management, while the second model focused on the

relationship between body size estimation and weight management practices, controlling for some characteristics of the participants. All associations were tested at 95% Confidence Level and analyses were performed using Statistical Package for Social Scientist (SPSS) version 23.

RESULTS

Socio-demographic characteristics

In our study 395 participants responded to all the questions included in the questionnaire (rate of participants = 98%). Females constituted about two thirds of the sample (67%), and the highest proportion (43%) of the participants had attained junior high school; only a few of them (7%) had no formal education. The mean age of the participants was 39.4 years (SD = 14.4). The participants within the age group 50-59 years constituted the highest proportion (71.9%) of those who engaged in healthy practices ($P < 0.05$). About half of the participants were married or cohabiting and approximately one-fifth was formerly married. The participants who were formerly married recorded the highest proportion (68.4%) of those who engaged in healthy practices ($P < 0.05$). Furthermore, 72.7% of the participants were inhabitants of Ussher Town and about two-thirds of the sample reported that their community was very conducive to physical activity. A higher proportion (43.2%) of residents of Ussher Town engaged in healthy practices compared to those in James Town (30.6%; $P < 0.05$). With respect to body size estimation, more than half of the participants correctly estimated their body size, while 24.6% and 19.7% underestimated and overestimated their body size, respectively. The BMI status of the participants indicates that more than half (57%) of them were overweight/obese and a small percentage (4.6%) were underweight. Additionally, 37% of the participants intended to stay about the same weight, while 29.6% and 11.9% wanted to lose and gain weight, respectively.

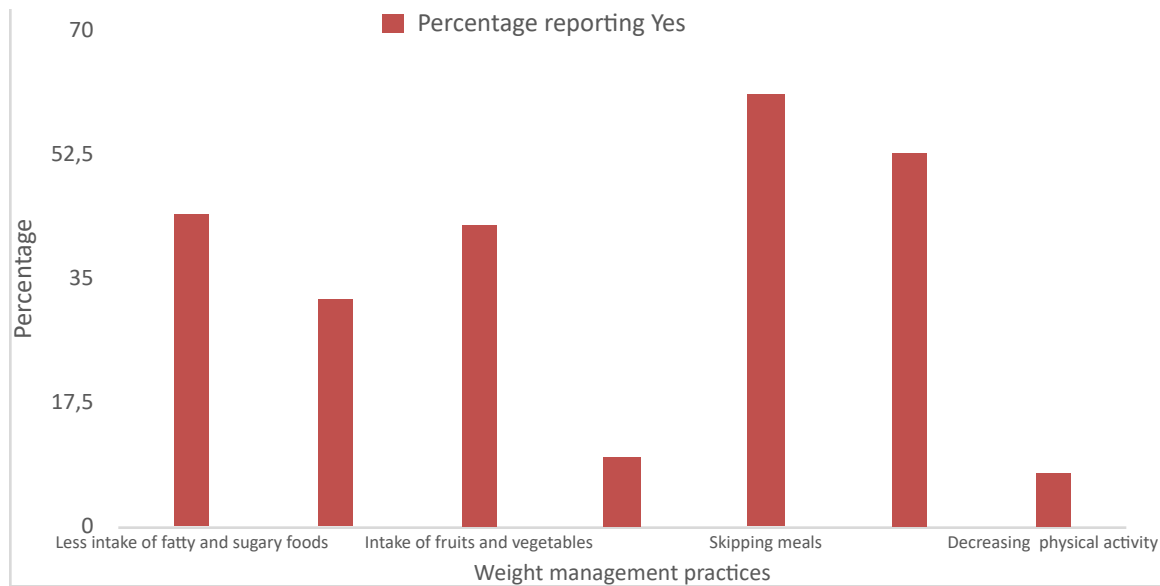
Additional characteristics of the participants are presented in Table 1.

Table 1. Descriptive statistics of the study participants ($n = 395$).

Variables			Weight management practices		
			Good Healthy $n = 157$	Poor healthy $n = 238$	P -value
	Frequency	%	%	%	
Body size estimation					$P > 0.05$
Correct	220	55.7	41.4	58.6	
Underestimation	97	24.6	62.9	37.1	
Overestimation	78	19.7	61.5	38.5	
Weight management goals					$P > 0.05$
Lose weight	29.6	117	58.1	41.9	
Gain weight	11.9	47	63.8	36.2	
Stay about same	37.0	146	63.7	36.3	
Do nothing	21.5	85	55.3	44.7	
Gender					$P > 0.05$
Male	129	32.7	62.0	38.0	
Female	266	67.3	56.6	43.4	
Age	(Mean=39.4years; SD=14.4)				$P = 0.035$
<30 years	127	32.2	50.4	49.6	
30-39	84	21.3	63.1	36.9	
40-49	81	20.5	59.3	40.7	
50-59	60	15.2	71.7	28.3	
60 and above	43	10.9	69.8	30.2	
Marital status					$P=0.040$
Never married	124	31.6	51.6	48.4	
Married/cohabiting	195	49.4	62.6	37.4	
Formerly married	76	19.2	68.4	31.6	
Educational attainment					$P > 0.05$
No education	28	7.1	57.1	42.9	
Primary	81	20.5	40.6	59.4	

Middle/JHS	170	43.0	63.0	37.0	
Secondary+	116	29.4	60.3	39.7	
Household wealth status					<i>P</i> > 0.05
Lower	157	39.7	65.6	34.4	
Middle	80	20.3	38.8	61.3	
High	158	40.0	45.6	54.4	
Community					<i>P</i> = 0.022
James Town	108	27.3	69.4	30.6	
Ussher Town	287	72.7	56.8	43.2	
Community conduciveness to physical activity					<i>P</i> = 0.002
Very conducive	246	62.3	67.5	32.9	
Somewhat conducive	102	25.8	49.0	51.0	
Not conducive	47	11.9	48.9	51.1	
Social support for healthy eating	Mean (standard dev.)				
Family	9.1 (4.1)				
Friends	8.2 (3.6)				
Health professionals	6.7 (3.2)				
Social support for physical activity					
Family	13.8(5.2)				
Friends	14.5 (6.6)				
Health professionals	10.9 (2.7)				

With regard to weight management practices, overall, a higher proportion of the participants engaged in healthy practices (60.3%) compared to poor healthy practices. Specifically, practices such as skipping meals (57.5%), consumption of fatty and sugary foods (49.9%), increasing physical activity (41.8%), and intake of fruits and vegetables (40.3%) were more common among the participants (Figure 1).



Figure

1. Weight management practices of the participants ($n = 395$).

Predictors of weight management practices

Table 2 shows results by the logistic regression models used to examine the relationship between independent and dependent variables. In Model 1, the results indicate no significant association between body size estimation and weight management practices. The effect of body size estimation on weight management practices was still not significant after the introduction of other variables (Model 2). However, there was a higher likelihood among participants who inaccurately estimated their body size to engage in healthy practices compared to those who accurately perceived their body size. Age emerged as a significant predictor of weight management practices. The likelihood of engaging in healthy practices increased as age increased (OR = 1.021; 95% Confidential Interval (CI) 1.000 to 1.042; $P = 0.048$). The results also indicate that the residents of James Town were 1.857 times as likely as those in Ussher Town to engage in healthy practices. Individuals who belonged to households of upper wealth category were less likely than those in lower wealth households to engage in healthy practices

(OR = 0.548; 95% CI: 0.330 to 0.911; $P = 0.020$). Furthermore, the participants who perceived their community as very conducive to physical activity were significantly more likely to engage in healthy practices compared to those who perceived their community as not conducive for physical activity (OR = 2.181; 95% CI: 1.081 to 4.402; $P = 0.030$). Finally, social support from friends and health workers significantly predicted engagement in weight management practices. There was a lower likelihood for individuals who received encouragement from friends to eat healthy diet to engage in healthy practices (OR = 0.923; 95% CI: 0.846 to 1.007; $P = 0.070$). However, encouragement from health workers to eat healthy diets increased the likelihood for individuals to engage in healthy practices (OR = 1.089; 95% CI: 0.995 to 1.192; $P = 0.063$).

Table 2. Predictors of weight management practices.

Variables	Weight management practices				95% Confidence Interval
	Model 1		Model 2		
	Odds Ratio	Stand. Error	Odds Ratio	Stand. Error	
Body size estimation <i>[Accurate estimation]</i>					
Inaccurate estimation	1.165	0.208	1.211	0.226	0.778, 1.884
Weight management goal <i>[Do nothing]</i>					
Lose weight			0.958	0.318	0.514, 1.788
Gain weight			1.955	0.415	0.866, 4.412
Stay about the same			1.312	0.308	0.717, 2.401
Gender <i>[Male]</i>					
Female			1.484	0.279	0.858, 2.567
Age			1.021**	0.010	1.000, 1.042

Marital/ Status <i>[Never married]</i>					
Married			1.217	0.291	0.688, 2.153
Formerly married			1.128	0.422	0.494, 2.578
Educational attainment <i>[No education]</i>					
Primary			1.345	0.483	0.521, 3.468
Middle/JHS			1.211	0.448	0.503, 2.913
Secondary+			1.659	0.489	0.636, 4.322
Community <i>[Ussher Town]</i>			1.000		
Jamestown			1.857**	0.266	1.102, 3.129
Household wealth status <i>[Lower]</i>					
Middle			0.779	0.311	0.423, 1.434
Upper			0.548**	0.259	0.330, 0.911
Community conduciveness to physical activity <i>[Not conducive]</i>					
Very conducive			2.181**	0.358	1.081, 4.402
Somewhat conducive			1.007	0.382	0.476, 2.128
Social support for healthy eating					
Family			1.044	0.039	0.967, 1.127
Friends			0.923*	0.044	0.846, 1.007
Health professionals			1.089*	0.046	0.995, 1.192
Social support for physical activity					
Family			0.974	0.029	0.920, 1.032
Friends			1.024	0.025	0.975, 1.075
Health professionals			1.052	0.056	0.943, 1.173

Note: Nagelkerke R² (Model 1 = 0.002; Model 2 = 0.162). **P < 0.05 *P < 0.1

DISCUSSION

This study examined the relationship between body size estimation and weight management practices in two urban poor communities in Accra. The results indicate a high incidence of overweight and obesity (57%) in our sample. This is marginally higher than the national prevalence of 56% reported by the Ghana Demographic and Health Survey in 2014. Notwithstanding the high incidence of overweight/obesity, more than one-tenth and a third of the participants intended to gain weight and stay about the same weight, respectively. Moreover, a substantial proportion of the participants also underestimated their body size. The finding about the underestimation of body size estimation is comparable with other studies in sub-Saharan Africa [27, 28]. This raises concerns, considering the health implications of overweight and obesity. In sub-Saharan African societies where there is preference for larger body sizes, individuals tend to have a lower likelihood to perceive themselves as overweight or obese [29–31]. Therefore, it is plausible that individuals who underestimated their body size may have compared themselves to those in the study communities who are bigger than they are. Contrary to the findings from some other studies [10, 16], our research did not find a significant association between body size estimation and weight management practices. However, this finding is consistent with the study by Quaidoo et al [32] among emerging adults in Ghana and that by Sirirassamee et al [33] among youths in Thailand. The finding that body size estimation was not a significant predictor of weight management practices suggests that no matter how a person estimates his or her body size, he/she is likely to engage in healthy or poor healthy practice. A probable explanation for this finding is that Ghana (particularly, the urban poor community) is a

less individualistic society compared to the Western societies. Therefore, the individual's perception about his/her body size alone may not lead to adoption of any health or nutrition behaviour. As a result of communal lifestyles, attitudes and perceptions in wider society probably influence behaviour towards acquiring weight and might contribute to weight management behaviours of individuals.

The findings of this study indicate that older individuals in the sample are more likely to engage in healthy weight management practices compared to younger ones. The finding that at older ages, people tend to be more engaged in healthy weight management practices is contrary to the study by Larose et al [34], which was carried out in the United States of America. The effect of age on weight management reflects a life cycle process. At older ages, people tend to be more careful and conscious about health and related behaviours. This is because, aging increases an individual's risk of acquiring non-communicable diseases, including hypertension, diabetes and cardiovascular diseases, some of which can become chronic. Indeed, increasing prevalence of non-communicable diseases (NCDs) have been reported in Ghana's adult population over the past few decades. Consequently, weight management might be an outcome of such health conditions among persons who are in higher age categories [35, 36]. Younger individuals were expected to engage in healthy practices than older persons because younger generations are more exposed to the media and messaging on thinness and health benefits of healthy weight. However, the findings of the present study indicate that they are at risk of engaging in poor healthy practice. Therefore, efforts to encourage healthy weight management should prioritise younger individuals.

Our findings further indicate that perceiving one's community as conducive to physical activity

increases the likelihood of engaging in healthy weight management practices. This finding is similar to that of the study conducted by Ogwumike et al [36] in Nigeria, which reported that neighbourhood safety from traffic and crime predicts physical activity participation. In communities that are so conducive, there is liberty to walk and engage in outdoor physical activities.

The finding that inhabitants of Jamestown have a higher likelihood of engaging in healthy weight management practices than Ussher Town residents suggests that although both communities are poor, there may be certain contextual factors that distinguish one from the other. For instance, observations from the field show that there are more spaces designated for recreation in Jamestown compared to Ussher Town. Some other differences in the social and environmental characteristics of the two communities may underlie the difference in the likelihood of engaging in healthy weight management practices by their inhabitants.

Finally, the importance of source of social support was evident in this study. The results indicate that support received from health professionals, in order to eat healthy diet increased the likelihood to engage in healthy weight management practices. However, support from friends decreased the likelihood to engage in healthy practices. Social support has been documented to be important in initiating and achieving weight management [38, 39]. In our study areas, larger body size is acceptable and cherished [40], therefore, encouragement from friends to engage in healthy practices to achieve a healthy weight may not yield positive results like a health professional's advice. In view of this, public health interventions with the aim to achieve healthy weight among inhabitants in an urban poor context need to prioritize programmes and campaign by health professionals on weight-related behaviours. Health professionals could provide

messages on weight management during clinic consultations and also embark on periodic community outreach to engage populations on weight-related behaviours.

This study is not without limitations. First, the data we analysed was cross-sectional and therefore we cannot infer causality from these results. Secondly, health status, particularly having chronic non-communicable diseases such as hypertension and diabetes may influence engagement in weight management practices. However, data on the participants' health status were not captured in this study. Notwithstanding these limitations, the findings of this study provide health policy makers with factors that need to be considered when developing interventions to help curb overweight and obesity prevalence in an urban poor context in Ghana and elsewhere in the sub-Saharan African region.

CONCLUSION

Despite this study found no significant association between body size estimation and weight management practices, engagement in weight management practices was influenced by age, community of residence, community conduciveness to physical activity, household wealth status, and social support from health professionals. The findings of our research suggest that interventions to promote weight management among the poor in urban areas should, therefore, consider also these factors to achieve the desired results.

References

1. Scheelbeek FDP, Cornelsen L, Marteau TM, Susan A, Jebb SA, Smith RD. Potential impact on prevalence of obesity in the UK of a 20% price increase in high sugar snacks: modelling study. *BMJ*. 2019;366:4786. <http://dx.doi.org/10.1136/bmj.14786>.
2. World Health Organization WHO. Obesity and overweight. 2018. [cited 2020 Apr 23]

Available from: <http://www.who.int/news-room/fact-sheets/detail/obesity-andoverweight>.

3. Agyemang C, Boatemaa S, Frempong GA, De-Graft Aikins A. Obesity in Sub-Saharan Africa. In Ahima RS (Ed.) *Metabolic Syndrome. A Comprehensive Textbook*, 2016.p 41–53. Springer International Publishing, Switzerland, Cham.
4. Ghana Statistical Service (GSS), Ghana Health Service (GHS), and ICF International. *Ghana Demographic and Health Survey 2014*. Rockville, Maryland, USA: GSS, GHS, and ICF International; 2015.
5. Amugsi DA, Dimbuene ZT, Mberu B, Muthuri S, Ezeh AC. Prevalence and time trends in overweight and obesity among urban women: an analysis of demographic and health surveys data from 24 African countries, 1991–2014. *Biomed J Open*. 2017;7:e017344.
6. Agyei-Mensah S, de-Graft Aikins A. Epidemiological transition and the double burden of disease in Accra, Ghana. *J Urban Health*. 2010;87(5):879–897.
7. Popkin BM, Adair LS, Ng SW. Global nutrition transition and the pandemic of obesity in developing countries. *Nutr Rev*. 2012;70(1):3–21.
8. Boatemaa S, Badasu DM, de-Graft Aikins A. Food beliefs and practices in Urban Poor Communities in Accra: Implications for Health Interventions. *BMC Public Health*. 2018;18:434. <http://doi.org/10.1186/s12889-018-5336-6>.
9. Puoane T, Tsolekile L, Steyn N. Perceptions about body image and sizes. among black African girls living in cape town. *Ethn Dis*. 2010;20.

10. Alwan H, Viswanathan B, Bovet P. Is Accurate Perception of Body Image Associated with Appropriate Weight-Control Behaviour among Adolescents of the Seychelles. *J Obesity*. 2011. <http://doi:10.1155/2011/817242>.
11. Grogan S. *Body image: Understanding body dissatisfaction in men, women and children*. London; New York: Routledge; 2008.
12. Yang K, Turk MT, Allison VL, James KA, Chasens E. Body mass index self-perception and weight management behaviours during late adolescence. *J Sch Health*. 2014;84(10):654–660. <https://doi.org/10.1111/josh.12195>.
13. Lee W-M, Seo M-S, Shim J-Y, Lee, Y-J. Body weight status misperception and its association with weight control behaviours, depressive mood and psychological distress in nulliparous normal-weight young women. *Ann Hum Bio*. 2015;42(6):528–532.
14. Gaylis JB, Levy SS, Hong MY. Relationships between body weight perception, body mass index, physical activity, and food choices in Southern California male and female adolescents. *Int J Adolesc Youth*. 2020;25:1:264–275. <http://doi10.1080/02673843.2019.1614465>.
15. Harring HA, Montgomery K, Hardin J. Perceptions of body weight, weight management strategies, and depressive symptoms among US college students. *J Am Coll Health*. 2010;59(1):43–50.
16. Duncan DT, Wolin KY, Scharoun-Lee M, Ding EL, Warner ET, Bennett GG. Does perception equal reality? Weight misperception in relation to weight-related attitudes and

behaviours among overweight and obese US adults. *Int J Behav Nutr Phys Act.* 2011;8:20.

17. Johnson F,

Beeken RJ, Croker H, Wardle J. Do weight perceptions among obese adults in Great Britain match clinical definitions? Analysis of cross-sectional surveys from 2007 and 2012. *BMJ Open.* 2014;4:e005561. <http://doi:10.1136/bmjopen-2014-005561>.

18. Dake FA, Thompson AL, Ng SW, Agyei-Mensah S, Codjoe SN. The local food environment and body mass index among the urban poor in Accra, Ghana. *J Urban Health.* 2016;93(3):438–455. <http://doi:10.1007/s11524-016-0044-y>.

19. Mahama SA, Acheampong AT, Peprah, OB, Bofo AY. Preliminary report for Ga Mashie urban design lab. Millennium Cities Initiative. The Earth Institute at Columbia University and The University of Ghana; 2011.

20. Harring HA, Montgomery K, Hardin J. Perceptions of body weight, weight management strategies, and depressive symptoms among US college students. *J Am Coll Health.* 2010;59(1):43–50.

21. Neumark-Sztainer D, Wall M, Eisenberg ME, Story M, Hannan PJ. Overweight status and weight control behaviours in adolescents: longitudinal and secular trends from 1999 to 2004. *Prev Med.* 2006;43(1):52–59.

22. Afrifa–Anane E, Agyemang C, Codjoe SNA, Gbenga Ogedegbe G, De-Graft Aikins A. The association of physical activity, body mass index and the blood pressure levels among urban poor youth in Accra, Ghana. *BMC Public Health.* 2015;15:269. <http://>

doi10.1186/s12889-015-1546-3.

23. Pulvers KM, Lee RE, Kaur H, Mayo MS, Fitzgibbon ML, Jeffries SK, et al.
Development of a culturally relevant body image instrument among urban African Americans. *Obes Res.* 2004;12(10):1641–1651.
24. World Health Organization. Obesity and Overweight (2006). [cited 2020 Apr 23]
Available from: <http://www.who.int/mediacentre/factsheets/fs311/en>.
25. Weiss EC, Galuska DA, Khan LK, Serdula MK. Weight-Control Practices Among U.S. Adults, 2001–2002. *Am J Prev Med.* 2006;31(1):18–24.
26. Sallis JF, Grossman RM, Pinski RB, Patterson TL, Nader PR. The development of scales to measure social support for diet and exercise behaviours. *Prev Med.* 1986;16:825–836.
27. Mogre V, Mwinlenna PP, Oladele J. Distorted self-perceived weight status and its associated factors among civil servants in Tamale, Ghana: a cross-sectional study. *Arch Public Health.* 2013;71:30.
28. Awosan KJ, Adeniyi SA, Bello H, Bello-Ibrahim Z. Nutritional status, weight perception and weight control practices among office employees in Sokoto, Nigeria. *Pan Afr Med J.* 2017;27:279. doi:10.11604/pamj.2017.27.279.12222.
29. Tuoyire DA, Kumi-Kyereme A, Doku DT, Amo-Adjei J. Perceived ideal body size of Ghanaian women: “Not too skinny, but not too fat”. *Women Health.* 2018;58(5):583–597. DOI: 10.1080/03630242.2017.1321607.
30. Matoti-Mvalo T, Puoane T. Perceptions of body size and its association with HIV/AIDS.

South Afr J Clin Nutr. 2011;24(1):40–45.

31. Scott A, Ejikeme CS, Clottey EN, Thomas JG. Obesity in sub-Saharan Africa: development of an ecological theoretical framework. *Health Promot Int.* 2013;28(1):4–6.
32. Quaidoo EY, Ohemeng A, Amankwah-Poku M. Weight perceptions, weight management practices, and nutritional status of emerging adults living in the Accra Metropolis. *BMC Nutr.* 2018;4:53. <https://doi.org/10.1186/s40795-018-0265-4>.
33. Sirirassamee T, Phoolsawat S, Limkhunthamm S. Relationship between body weight perception and weight-related behaviours. *J Int Med Res.* 2018;46(9):3796–3808.
34. LaRose JG, Leahey TM, Hill JO, Wing RR. Differences in motivations and weight loss behaviours in young adults and older adults in the National Weight Control Registry. *Obesity.* 2013;21(3):449–453.
35. Nyaaba GN, Masana L, de-Graft Aikins A, Beune E, Agyemang C. Factors hindering hypertension control: perspectives of front-line health professionals in rural Ghana. *Public Health.* 2020;181:16e23. <https://doi.org/10.1016/j.puhe.2019.11.007>.
36. Sanuade OA, Boatemaa S, Kushitor MK. Hypertension prevalence, awareness, treatment and control in Ghanaian population: Evidence from the Ghana demographic and health survey. *PLoS ONE.* 2018;13(11):e0205985.
37. Ogwumike OO, Kaka B, Adegbemigun O, Abiona T. Health related and social-demographic correlates of physical activity level amongst urban menopausal women in Nigeria. *Maturitas.* 2012;73:349–353. [10.1016/j.maturitas.2012.09.010](https://doi.org/10.1016/j.maturitas.2012.09.010).

38. Wang ML, Pbert L, Lemon SC. Influence of Family, Friend and Co-worker Social Support and Social Undermining on Weight Gain Prevention Among Adults. *Obesity*. 2014;22:1973–1980. doi:10.1002/oby.20814.
39. Aziz NSA, Zaki NAM, Nor NSM, Ambak R, Man CS. Perspective on Obesity Problems and Associated Factors to Reduce Weight among Overweight and Obese Housewives: A Qualitative Study. *J Womens Health*. 2016;5(6). Doi: 10.4172/2325-9795.1000255.
40. Frempong GA. The influence of body size estimation on weight management behaviours in Accra, Ghana [Thesis]. University of Ghana, Balme Library; 2017. [cited 2020 Apr 23] Available from: <http://ugspace.ug.edu.gh/handle/123456789/26251>.

Appendix 1. Figural stimuli (Source: Pulvers et al. 2004 [23]).

