

Pattern of underweight and overweight in Lagos Southwest Nigeria

Abstract

Objective: The aim of this study is to determine the pattern of underweight and overweight among Lagosians.

Methods: The sample size was 118 participants that were selected in Lagos during a cross sectional survey. The weight of each individual was determined with a weighing scale in kilogram. The height of each participant was also determined in meters. The body mass index was computed using the formula body mass index is equal to weight in kilogram divided by height in meters squared. Demographic data were obtained.

Results: In the study population with age range 18-88years, 3.39% (4 participants) were underweight. 25% of the underweight was male while 75% were female. One each of the underweight are in the third, fourth, fifth and sixth decade of life. In contrast, 39.83% (47 participants) of the study population were overweight. Of the overweight participants 34.04% (16 participants) were male while 65.06% (31 participants) were females.

Discussion: Human weight is a subject of great concern not only to individual but also to the society and the medical world. Underweight and overweight is associated with medical condition of prognostic importance. Some disease condition cut across both sides of normal weight, some commoner in underweight some commoner in overweight while some are almost exclusively seen in underweight.

Conclusion: Overweight is commoner among Lagosian than underweight.

Keywords: lagosians, underweight, sociodemographic, rural dweller, overweight, alcohol drinkers

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Abbreviations: BMI, body mass index; SES, socioeconomic status; CDC, centre for disease control; GSHS, global school-based student health survey; SANHANES, south african national health and nutrition examination survey; NHANES, national health and nutrition examination survey

Aim/objective

With the high cost of living and standard of living in Lagos, the question we seek to address is there underweight or overweight people in Lagos? If present, what age group and in which gender? Are there gender variability among the underweights and overweights? The aim of this study is to determine the pattern of underweight and overweight among Lagosians.

Introduction

Human weight is a subject of great concern not only to individual but also to the society and the medical world. The city of Lagos is in southwest of Nigeria and was the former capital of the country. It still remains the major economic nerve centre of our country and can be rightly referred to as the commercial capital of Nigeria and possibly of West Africa. It is transforming to a megacity with its ever increasing teaming population presently put at about 20 million people. The ongoing transformation in Lagos has resulted in proliferation of divers industries including, financial institutions (microfinance institution inclusive) health care related industries with fast food industries springing forth as a coping mechanism to support the fast and busy

lifestyle in Lagos. Underweight and overweight are associated with medical condition of prognostic importance. The normal human weight is body mass index of 18.5kg/m²-24.9kg/m². Underweight is body mass index less than 18.5kg/m² while overweight is body mass index between 25-29.9kg/m².¹ While some apparently well individuals may appear underweight, it is also observed that some obese, overweight or normal subjects may become underweight by virtue of pathologic condition like malignancies.

Methodology

The sample size was 118 participants that were selected in Lagos during a cross sectional survey. The weight of each individual was determined with a weighing scale in kilogram. The height of each participant was also determined in meters. The body mass index was computed using the formula body mass index is equal to weight in kilogram divided by height in meters square (BMI=weight in kilogram/height in meters square). Each individual consented to the taking of measurements from them. Demographic data were obtained excluding names.

Results

In the study population of 118 Lagosian with age range 18-88 years, 3.39% (4 participants) were underweight. 25% of the underweight was male while 75% were female. One each of the underweight are third, fourth, fifth and sixth decade of life. None of the underweight had short or tall stature. In contrast, 39.83% (47 participants) of the

study population were overweight. Of the overweight participants 34.04% (16 participants) were male while 65.06% (31 participants) were females. The male to female ratio is being 1:2. The distribution of overweight according to decades of life is as follows 6.38% (3 females) in third decade, 10.64% (5, one male four females) in fourth decade, 29.78% (14 participants, four males and 10 females) in the fifth decade, 34.04% (16 participants, seven males and 9 females) in sixth decades of life, 12.77% (6 participants, 3 per gender) in seventh decades, 4.26% (2 participants one male one female) in eighth decade and 2.13% (one female) in the ninth decade of life (Table 1) (Figure 1). There is no mode among underweight in this study with respect to decades of life though genderwise there was in the female population. The mode among overweight is in the sixth decade of life. Genderwise, the mode for females is in the fifth decades while the mode for male was in the sixth decades. Only the female gender are overweight in the extremes of adulthood in this study as there were no male overweight subjects in that age bracket (Figure 2).

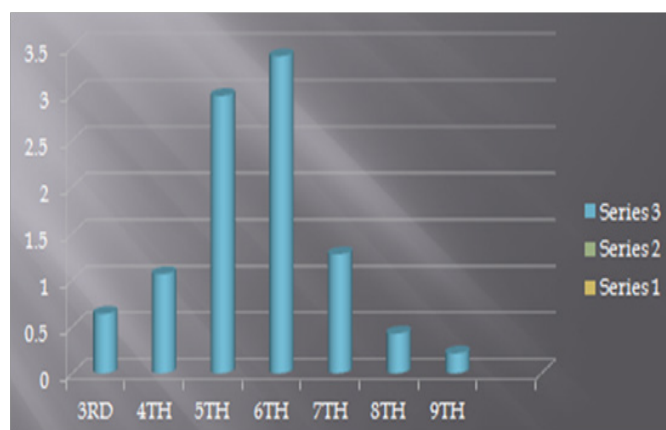


Figure 1 Percentage of overweight against decades of life.

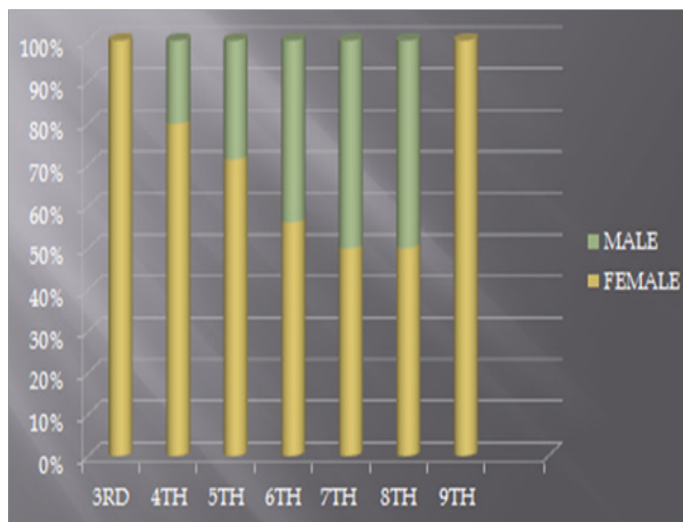


Figure 2 pattern of sex distribution within decades of life among overweight.

Discussion

The distribution of overweight in the different decades of life is well outlined in Table 1 and Figure 1 with more than half of the overweight individuals in the study population being in their forties

and fifties, similarly overweight was not found in individuals in their twenties and in their eighties in this study according to Figure 2. Some disease condition cut across both sides of normal weight as they are seen in both underweight and overweight subjects, some commoner in underweight some commoner in overweight while some are almost exclusively seen in underweight individuals. The prevalence of underweight is low in Lagos based on this study; this is comparable to what is obtainable in the United States and Canada.¹⁻⁴ The prevalence of underweight is higher in females than males in Lagos, similar findings was obtainable in Korea. In this study underweight was found both in the young and the middle aged subjects this has also been documented in other studies.⁵ In Lagos overweight is twelve times commoner than underweight in the general population though both underweight and overweight are commoner in the female gender. Genderwise, overweight is sixteen times commoner in male and ten times commoner in females. The prevalence of underweight is low in developed countries but it remains high in developing countries. The prevalence of underweight in the United States and Canada is 2.4%¹ and 2.0%³ respectively. In Asian countries, the prevalence of underweight is very high: 19.2% in Thailand in 2003,¹ 9.6% in Malaysia in 2003¹ and 20.9% in Vietnam in 2005.⁶ Underweight and overweight coexisted in all countries around the world, the same coexistent is found in this study in Lagos southwest Nigeria.

Many developing countries face the dual challenge of continuing underweight and increasing overweight.⁷ Lagos population needs to be evaluated regularly for the pattern of underweight and overweight in order to see if same dual challenge will be present. Literature focusing on urbanization and health showed that the prevalence of overweight is significantly higher in urban than in rural areas.⁸ Underweight is associated with increased risk of mortality and morbidity. It is reported that the prevalence of underweight is increasing among Korean young women.⁹ Although both obesity and underweight are related to an increased risk of mortality¹⁰ and morbidity,¹¹⁻¹³ health risks of underweight are less known than those of obesity. The health risk of underweight need to be extensively studied in Lagos, Nigeria and the world over.

Among Korean women aged 20 years and over, the age-adjusted prevalence of underweight insignificantly increased between 1998 and 2007 (5.5%→6.7%, *P* for trend=0.199), while the age-adjusted prevalence of underweight among Korean men decreased from 4.8% in 1998 to 2.8% in 2007 (*P* for trend=0.020). Especially among women aged 20 to 39, the prevalence of underweight had a significant increasing tendency from 8.2% in 1998 to 13.2% in 2007 (*P* for trend=0.003) unlike that among men. Khang et al.¹⁴ emphasized that more national studies regarding the increasing tendency of underweight prevalence among young Korean women are warranted. In a previous study¹⁵ of a Canadian population using the National Population Health Survey, underweight people were more likely to be females, youth under 25 years of age, singles, current smokers and individuals with poor self-perceived health. In another study¹⁶ of female students in Poland, underweight was shown to be related to higher socioeconomic status (SES). Shin et al.¹⁷ showed that underweight prevalence varied significantly depending on maternal education level and residential districts. The causes of underweight are multifarious and include smoking and underlying diseases, diet and excessive exercise, and eating disorders.¹⁸ Different sociodemographic factors can contribute to being underweight between men and women. We ascertained that various sociodemographic factors were associated with underweight depending on sex. Among Korean women, young age, being

unmarried, and former smoking were determined as specially related factors of underweight. On the other hand, among Korean men, current smoking and history of cancer were related to underweight. In

Table 1 overweight in percentage versus decades of life

Decades of life	3 rd	4 th	5 th	6 th	7 th	8 th	9 th
% Overweight	6.38%	10.64%	29.78%	30.04%	12.77%	4.26%	2.13%

On the other hand, a good proportion of men want to have a stronger and muscular body.¹⁹ This difference in ideal body shape between men and women may be an important cause explaining the finding that young age and being unmarried were related to being underweight only among women in a Korean study.⁹ Another idea that could explain the relationship between marriage and weight is that being married may increase the opportunities and cues for eating because married people are likely to eat together.²⁰ In Korean society in which women are mainly responsible for preparation and cooking meals for the family, we think women are more likely to have increased weight after marriage compared to men. Smoking is considered to be one of the important causes of underweight. It is generally regarded that smoking and relative body weight has an inverse relationship among both men and women.²¹ Women's under-reporting of smoking status in Korean society is related to a cultural background in which women's smoking is stigmatized. The tradition of Confucianism in Korean society is considered a major cause which has brought about social repression of women's smoking. Also, self-reported current female smokers might be less affected by the social pressure than underreporting female smokers. This indicates that self-reported current female smokers remaining in the current smoker category could also be relatively less influenced by other social pressures to be thin compared to under-reporting female smokers who are misclassified as ex-smokers or non-smokers.

Cancer is also considered to be one of the important causes of underweight since cancer is one of the major chronic wasting diseases and can incur weight loss in affected persons. Similarly hypoglycemia is known to be paraneoplastic syndromes that antedates some cancers and can occur in underweight though the episodes in affected subjects including underweight may go unrecorded.²² In the Korean study, a past history of cancer was found to be related to underweight only among Korean men. Among Korean women, only 4.5% of women with cancer history were diagnosed as being underweight compared to 10.6% of women without cancer history. Underweight people are a mix of persons who have lost weight because of underlying diseases or smoking, persons who have reduced weight by diet and excessive exercise, and persons with body weight distortion because of eating disorder.¹⁸ These latter three set of underweight will possibly be exposed to different grades of hypoglycemia which is worth studying in the future and it will be very helpful to know the prevalence of hypoglycemia and the grades commonly seen in underweight worldwide.²² It was found in the Korean study that alcohol drinkers and subjects with chronic diseases had a lower frequency of underweight among both men and women. The relationship between alcohol consumption and body weight has not been made clear in previous studies. However, most studies have shown that alcohol drinkers are likely to consume more energy than non-drinkers because alcohol energy is not compensated by decreasing the intake of non-alcohol food energy.²³ Son et al.²⁴ presented that alcohol drinkers had a higher intake of total energy and macronutrients except carbohydrates among both Korean men and women. The people of Africa are often

addition, alcohol drinking and history of chronic diseases were related to a lower frequency of underweight among both men and women.

thought of as being hungry and thin.²⁵ However, overweight and obesity (as defined by the WHO) are becoming more common in poor and middle-income countries.^{26–28} These conditions increase the risk of arterial hypertension, ischemic heart disease, cerebrovascular disease, dyslipidemia and Type-2 diabetes.²⁵

In the African continent in a survey developed and administered by the WHO and the Center for Disease Control (CDC) in the African countries of Benin, Djibouti, Egypt, Ghana, Mauritania, Malawi, and Morocco, as part of the Global School-based Student Health Survey (GSHS), Unadjusted rates of being underweight varied from 12.6% (Egypt) to 31.9% (Djibouti), while being overweight ranged from 8.7% (Ghana) to 31.4% (Egypt). Obesity rates ranged from 0.6% (Benin) to 9.3% (Egypt). Females had a higher overweight prevalence for every age group in five of the countries, exceptions being Egypt and Malawi. Overall, being overweight was more prevalent among younger (≤ 12) adolescents and decreased with age. Males had a higher prevalence of being underweight than females for every country. There was a tendency for the prevalence of being underweight to increase starting in the early teens and decrease between ages 15 and 16. Most of the potential risk factors captured by the GSHS were not significantly associated with weight status.²⁹ In a South African study, more adolescent boys than girls were underweight (17.3% vs. 9.9%) and more adolescent girls than boys were overweight (7.7% vs. 3.5%). Interestingly, the 14-year-old boys had the highest prevalence of underweight (55.2%), whereas the highest prevalence of obesity was found in the 15-year-old boys (11.1%). However, available evidence indicates that overweight in girls increases with age, while overweight increases in boys up to the age of approximately 15 years, and decreases thereafter.³⁰

The 17-year-old girls had the highest prevalence of overweight (22%) in the study from the Cape metropole.³¹ The authors state that differences between studies may be owing to differences in the racial composition of the study populations, and/or their access to food. It is also true that different cut-off points were used in the studies, and that the same number of adolescents may not be classified as underweight or overweight, respectively, according to the internationally accepted BMI cut-off points for children, as would be the case if the World Health Organization z-scores for weight for age or BMI for age were applied.^{32,33} The high prevalence of underweight in adolescent boys in the study in the Western Cape is of concern, and the results need to be investigated further. According to national statistics, 8.5% of youth aged 15–24 years were living with human immunodeficiency virus in 2013.³⁴ Food insecurity may also play a role in underweight.³⁵ The study results confirm the high prevalence of combined overweight and obesity in adolescent girls reported in the South African National Health and Nutrition Examination Survey (SANHANES).³⁶ South Africa is also one of the countries with the highest prevalence of combined overweight and obesity in adult women.^{36,37} The tracking of obesity from adolescence to adulthood has been reported³⁸ and adolescent obesity has been shown to increase the risk of short-term and future cardiovascular risk.^{39–41}

There is no national data on overweight or obesity in all the geopolitical zones of Nigeria, however in a local study done in Ikorodu one of the suburbs of Lagos southwest, Nigeria it shows that the prevalence of obesity in Ikorodu is 34.62%. The prevalence of obesity in male and female are 21.15% and 13.46%. The prevalence of central obesity in Ikorodu using the waist circumference is 23.08%. The prevalence of central obesity in male and female using same waist circumference is 1.92% and 21.15%.⁴² In a similar study in Korea on abdominal circumference though with the use of a body composition analyser in addition, there was a significant positive correlation between abdominal circumference measured by body composition analyzer and measuring tape in the normal, the overweight, and the obese groups of both gender. But, the results were the same only in females in the underweight group.⁴³ It is suggested that in a future study in Nigeria, a body composition analyser be used to determine abdominal circumference in underweight, overweight and obese Nigerians. In all the geopolitical zones in Nigeria, there is paucity of data on underweight and there is no national data on it. Based on body mass index classification, about 2% of a sample population of rural dweller in Makurdi, north central Nigeria was underweight, 72% was of normal weight, 22% was overweight and 4% was obese.²⁵ Based on body mass index, there was no underweight among the males studied in rural settlement of Makurdi. Overweight was higher in urban males and females.²⁵

Conclusion

Overweight is commoner (twelve times) among Lagosian than underweight. Both conditions are commoner in the female gender in Lagos southwest Nigeria. A larger population based study to determine the prevalence and risk factors for underweight and overweight in Lagos is needed. Similarly a periodic nationwide monitoring of the pattern is needed so that it can be a form of long term health indices not only for the city of Lagos, but also for our nation. Let us borrow a cue from other countries notably the United States of America who have series of National Health and Nutrition Examination Survey (NHANES) data which are helpful in formulation of national health policies. A Nigerian National Health and Nutrition Examination Survey are needed!

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Conflict of interest

The author declares no conflict of interest.

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