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# PREVALENCE OF CHILDHOOD OVERWEIGHT /OBESITY IN BASIC SCHOOL IN ACCRA

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**Conflict of interest:** None declared

## SUMMARY

**Background:** This study intends to determine the prevalence of obesity among children in the University Primary School, Legon. It also intends to determine relationship between the prevalence of obesity in children and socio-economic status of their parents and the most endemic age group.

**Method:** The study was conducted using 270 students sampled at random in the basic school. Children's height, weight and skin fold measurement were taken. Children's parent's socio-economic status was assessed using close and open-ended questionnaires administered to parents. Data obtained was then analyzed using SPSS software.

**Results:** Prevalence of obesity in the university primary school was found to be 10.9% with higher prevalence in girls (15.0%) than in boys (7.2%) (P-value=0.001). There was higher prevalence among children from high socioeconomic background (21 – 23%) with least prevalence in those from low socio-economic homes (10 – 20%) though this was not significant (p-value=0.23). Girls showed a higher body fat composition between 10 –12years, whiles boys showed higher body fat stores between 8 – 10 years old. Increasing mother educational level reduced prevalence of child obesity (p-value=0.043) but this was not seen in increasing fathers' educational level (p-value=0.261).

**Conclusions:** The prevalence of obesity in children in University primary school was very high and worrying. The prevalence increased with socio-economic status and it is more common in females than males. It was recommended that similar study should be expanded nationwide.

## INTRODUCTION

According to Barkhru,[1] Obesity may be described as a physical condition characterised by excessive deposition or storage of fats in adipose tissues. Obesity usually results from consumption of foods in excess of physiological needs. It is a serious health hazard as the extra fat puts a strain on the heart, kidneys and liver as well as the large weight bearing joints such as the hips, knees and ankles, which ultimately shortens the life span.[1] There is now growing realisation that much adult obesity has its origin in infancy, childhood and adolescence.[1, 2] The prevention of obesity should therefore begin in infancy. It is however, not necessary that fat babies become fat children, but obese five-years-old are more likely to become fat adolescents.[1]

Due to the difficulty in treatment of childhood obesity[3] and the permanent health damage associated with it,[4] it has become imperative to take measures to avoid or tackle the developing obesity at its onset rather than allowing it to develop and look for a lifelong treatment. The most important step in preventing childhood obesity with its associated problems lies in comprehensive study of its prevalence and causes. Preventive treatment is very difficult to plan in developing countries as data available on its prevalence is insufficient. This project therefore intends to increase the enlightenment of the actual prevalence of childhood obesity in school going children.

## METHOD

The study was a descriptive, cross-sectional design conducted on University Primary School pupils. A critical probability value of 95% confidence interval, an alpha value of 0.05 was used to determine sample size, knowing that population of children was 1600. A total sample of approximately 300 was obtained upon computation and selected.

However, a sample of 270 gave consents and was used. Selected children were between the ages of 5 to 15 years enrolled in the basic school. Subjects were basic school children, free from any obvious physical and mental deformity, are willing to participate and consent of their parents was also sought for their participation in the study. Ten children, 5 females and 5 males were selected at random in each class.

Systematic random sampling technique was used to choose the pupils in each of the class visited. Both closed and open ended questionnaires were used to obtain information on the socio-economic status (SES) of parents and or guardian of the children after parental

concerns have been sorted.[5] The questionnaire covered the parent/guardian's residence, level of education, occupation, income, furniture, electrical appliances and modes of transport. The anthropometric measurements that were taken include; weight (with a weighing scale, ± 1.0Kg), height (with a mirotoiles or metal measuring tape placed perpendicularly against a flat vertical wall, ±0.1cm), [6] and biceps, triceps, subscapular and suprailiac skin folds (with skin fold callipers, ±0.1mm).

These measurements were to assess body mass (weight), linear dimensions (height), BMI and body fat composition (skin folds). Anthropometric data were taken following protocols by cogill, [7] and Jellife.[8] Data collected was analysed using SPSS software. Total skin fold measurement was compared with skin fold conversion table obtained from World Health Organization[9] to obtain percentage body fat (PBF). Childhood obesity was assessed using WHO BMI for Age[10] and PBF definitions.[9]

## RESULTS

A total of 270 pupils were used in this survey, the males were 141 representing 52.2% and 129 of them were females representing 47.8%. They were between 5 to 15years (range) of age with a modal age of 7years representing 15.8% and 15years old subjects least represented (1.1%). About 47.7% of the children fell within the medium socio-economic class making this the most common and 10.1% of the sturdy subjects recorded a low socio-economic status which was the least common as in Figure 1.
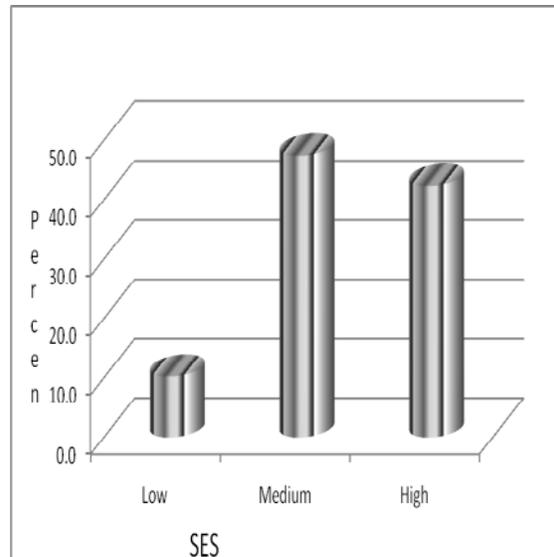


**Figure 1** Percentage distribution of socio-economic status of subjects

Table 1 shows that prevalence of obesity among the pupils at 10.9% was significantly higher in girls (15.0%) than in boys (7.2%), p-value = 0.001. There was good correlation between the two methods used in assessing childhood obesity, the WHO BMI for age definition of obesity and body fat composition of the children.

However, large difference in the prevalence rate from the two method's definitions was observed (10.9% using BMI for age, compared to 17.5% using PBF), especially among boys (7.2 using BMI for age, compared to 15.6% using PBF). Overweight was also endemic in the general population (15.8%).

**Table 1** Prevalence of obesity among boys and girls in primary and junior high school

| Gender | WHO BMI for age description (%) | | | | Percent body fat interpretation (%) | | | | Corre-lation |
|--------|-------------|--------|------------|-------|-------------|--------|------------|-------|------|
| | Underweight | Normal | Over weight | Obese | Underweight | Normal | Over weight | Obese | |
| Boys | 1.4 | 74.6 | 16.7 | 7.2 | 56 | 21.3 | 7.1 | 15.6 | 0.71 |
| Girls | 3.9 | 66.1 | 15.0 | 15.0 | 7.4 | 41 | 32 | 19.7 | 0.69 |
| Total | 2.6 | 70.6 | 15.8 | 10.9 | 33.5 | 30.4 | 18.6 | 17.5 | 0.66 |

There was a greater prevalence of obesity among high socioeconomic individuals than medium and low socioeconomic status (Table 2). This was however not significant (p-value =0.23). Underweight was surprisingly high (≥29%) across socio-economic strata among study participants.

**Table 2** Obesity distribution over socio-economic strata

| SES | Description (%) | | | | Total (%) |
|---|---|---|---|---|---|
| | Under-weight | Normal | Over-weight | Obese | |
| Low | 30.0 | 15.0 | 40.0 | 15 | 100.0 |
| Medium | 32.0 | 33.0 | 16.0 | 19.0 | 100.0 |
| High | 29 | 32.0 | 17.0 | 22.0 | 100.0 |

Linear regression model showed factors that significantly affect overweight and obesity in this study were sex of respondents (females higher than males, p-value=0.001) and educational level of mothers (increase in educational level was associated with decrease in overweight/obesity, B=-0.242, p-value=0.043). Overweight and obesity was however not significantly associated with fathers educational level, household income or socio-economic status (p-values=0.269, 0.625 and 0.978 respectively).

## DISCUSSION

Most of the children sampled came from medium to high socio-economic status. This was expected as sampled school was a private school and only these categories of people can afford it. Females in general recorded a higher body composition than male subjects.

This may be due to both hormonal changes and cultural predisposition of Ghanaians to view obesity in females as a sign of wealth, wellbeing and beauty.[11] Parents therefore do not make any conscious effort to improve their children's obesity status but rather encouraging its worsening. A 10.9% prevalence of child obesity was observed with higher prevalence in girls (15.0%) than boys (7.2%) (P-value=0.001)(see Table 1). This is however lower than earlier survey conducted by Abachinga,[12] (12) which recorded a 19.3% prevalence in Legon and Achimota school going children.

The prevalence rate is however very high and confirms the literature explanation of an increasing prevalence of obesity in developing countries.[13] Combined prevalence of overweight and obesity however has prevalence of 26.7% which much higher than earlier report by Abachinga.[12] This indicate an increased tendency of worsening future trends of childhood obesity with its attendant problems, making it an important public health issue in the study subjects. There was higher prevalence of obesity in children whose parents were in the high socio-economic status (SES) than both medium and low SES, with females recording as high as 23.3% and 21.3% in males. This was however not statistically significant (p-value=0.23). Due to higher purchasing power, electrical gadgets such as television, video, computer games, audio players and computer games, are all readily available to such children. The children therefore expected to have higher tendency to spend most of their time with these gadgets, thus promoting lots of sedentary hours daily.

Also, as children watch television, adverts of high caloric snacks and refined foods are shown which entice them to patronize them, [14] and once purchasing power is high indulgence in these snacking may also be high. Women or mothers educational level significantly affected childhood obesity. This was expected as increased maternal education has been associated with enhanced acquisition and use of health knowledge and health services, improved family resources, affects preferences for child health and family size.[15] The limitations of this work include the inability to give a definite reason for the high prevalence of obesity in subjects due to unavailability of data on their physical activity, dietary intake, parental anthropometric and life style measurements (to assess genetic and family influence) and the relatively smaller site of the study.

## CONCLUSION

Childhood obesity is very high in the study community, especially among female subjects. Children form high socio-economic back-ground have higher incidence of childhood obesity than those from medium and low soico-economic background. An expansion of this survey to know trend of national prevalence rate of obesity is strongly recommended. The parents and teachers of children in the school should be given proper education on some of the consequences of obesity.

## ACKNOWLEDGEMENT

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