Adiposity Patterns In Adolescents Of Southeastern Nigeria Based On Their Body Mass Index.

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ABSTRACT

Anthropometrical data related to weight and heights were generated from 857 adolescents from Southeastern Nigeria. Using standard statistical packages, adiposity patterns were analyzed by delineation of the Body Mass Index (BMI = kg/m^2) according to the method of WHO (1995). Result showed that 82.5% of the sample population had normal weight, 17.5% were overweight while 1.65% were obsessed. Generally, females showed a higher tendency to obesity than males. The implication of the result for the population under study was discussed.

Key words: Adiposity patterns, Adolescents, Southeastern Nigeria.

AAA (2002) reported that a growing epidemic is threatening the health of millions worldwide. This epidemic is related to obesity ...terns and their associated illnesses. The bu' ...n of the American Association of Anatomy (2002) quoted the report of the Nutrition and Health experts from 25 countries to mention that the prevalence of obesity in adults is up to 25% in some countries in Wester ... ...pe and the Americas. The figure rise ... ... for women in Eastern Europe and Medi' ... ranean countries and in black women in the ...ite... ...ates. Melanesia, Micronesia and Polynesia have the highest obesity prevalence of up to 70% in some areas (AAA, 2002). Diet is the principal exogenous determinant of plasma cholesterol con...iration, which is related to adiposity pattern... The major health risk of the highly obsessed is coronary heart d ...ase. Although, this has a multifactorial aetiology, hypercholesterolemia is one of the most important factors involved. Other health problems related to obesity include respiratory problems, gallbladder disease, cancer, diabetes mellitus and musculoskeletal problems (WHO 1995). Studies on adiposity patterns in Nigeria have been rather scarce. Complete neglect of childhood obesity is also observed despite the fact that childhood obesity is a major antecedent to adult obesity (NIH, 1995). Guo et al (1994) observed that adult obesity is greater for adolescents with high values of body-mass

index. Increased adiposity is related to abnormal lipid profiles during childhood and adolescence (Popkin and Udry, 1998). Other socio-economic factors related to high body mass in adolescents include reduced chances of marriage and subjection to discriminatory behaviour (Skunnkard and Sorenson, 1993). This paper presents report on the adiposity patterns of adolescents in Southeast Nigeria using statistical deductions from their body mass index.

MATERIALS AND METHODS

The collection of data were carried out between 1998 and 2000 on 857 adolescents. The detailed primary sampling frame, which included senior secondary school students and first and second year students in some medical schools in Southeastern Nigeria, is presented in Table 1. The data collection is still on going but for the purpose of this paper, data generated over a two-year period are presented. Although, there is little agreement about the standards for measuring body fatness in youth, the approach adopted in this survey is the Body Mass Index (BMI = Kg/m^2) recommended by WHO Expert Committee (1995). In the present study, height (m) and weight (g) were generated by direct measurement of adolescents. BMI were calculated from generated data and subjects were allocated to one of two groups on the basis of their BMI following Bray (1989):

- Those of normal weight with a BMI < 25kg/m^2
- Those of overweight with BMI > 25kg/m^2
- Those obsessed with BMI > 30kg/m^2

Table 1: Adolescents in the study Sample characteristics

Sample Characteristics	Number (n)	Percentage (%)
Males		
12 – 14yrs	92	10.7
15 – 16yrs	130	15.2
17 – 18yrs	156	18.2
19 – 21yrs	104	12.1
Sub total	**392**	**45.7**
Females		
12 – 14yrs	54	6.3
15 – 16yrs	169	19.7
17 – 18yrs	183	21.4
19 – 21yrs	59	6.9
Subtotal	**456**	**54.3**
Total sample size	**857**	**100**

Table 2: BMI of Adolescents of Southeastern Nigeria

	Mean Weight	Mean Height	Mean Age	Mean BMI
Males	52.19 ± 14.33	1.58 ± 0.14	16.07 ± 3.61	20.50 ± 3.45
Females	55.73 ± 10.99	1.56 ± 0.9	16.79 ± 2.69	22.55 ± 3.45
Pooled Sample	54.61 ± 12.24	1.57 ± 0.11	16.56 ± 3.30	21.90 ± 3.56

Table 3: Classification of BMI in terms of obesity patterns in pooled sample

BMI Classification	% of Total Population	Interpretation
Percent BMI < 25	82.5	Normal Weight
Percent BMI ≥ 25	17.5	Overweight
Percent BMI > 30	1.65	Obsessed

RESULTS AND DISCUSSION

Characteristics of the adolescents profile in the study sample are shown in Table 1. The MBIs as presented Table 3 indicate that 82% of the adolescent population had normal- weight, 17.5% were overweight while 1.65% were obessed. Females showed a higher tendency to obesity than males as indicated by the mean height and weight of the males/females relative to their respective BMIs (Table 2).

Data from other races indicate that the values obtained in the present study are on the low side. Popkin and Udry (1998) found values of 23.6 for black Hispanics, 26.7 for white Hispanics and 21.9 for Mexicanm adolescents living in United States. Must et al (1991) reported high values of overweight adolescents for American blacks.

Various factors have attributed to differences in racial BMI indices. Messinis and Milingos (1998) mentioned that recent discovery of th obese (*ob*) gene has provided insight into the mechanism which controls body fat mass. Leptin, a product of the *ob* gene, serves as the link between fat and the brain. This protein by acting at the level of the hypothalamus decreases food intake and increases energy expenditure. Experiments have shown that animals that lack leptin (*oblob* mice) develop or found obesity and become infertile (Lee et al, 1996). Thus, although leptin is important for the control of fat stores in certain species, th role of this substance in the development of human obesity remains obscure.

In humans, it has been shown that serum leptin centration values correlate significantly with body mass index (Coleman, 1978). However, Considine et al (1996) observed that although leptin centrations reduces in obese subjects losing weight between 8-12 weeks, leptin values increase again during maintenance of lower weight. This suggests that other factors such as caloric intake and energy expenditure may regulate secretaion of leptin. Despite the obscurity in the mediating actions of certain proteins to increase or retard the desire for hyperphagia, diet generally is the principal exogenous factors related to weight patterns. Hence hyperphagia and profound obesity have direct correlation (Cole, 1991).

The implication of the low weight adolescents in the study sample is that fewer individuals are likely to develop the multifarious diseases associated with obesity. This should be encouraged for the population under study.

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