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Obesity and Body Image Discrepancy among School Adolescents in Ile-Ife, Osun State, Nigeria

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Abstract: Obesity among adolescents is now of great public health concern because of the health problems it poses. Poor body image has been associated with obesity in the past and may have a major effect on future psychological social wellbeing of individual including adolescents. This study determined the prevalence of overweight and obesity among school adolescents in Ile-Ife and also determined Body Image Discrepancy (BID) among the respondents. The study employed a cross-sectional descriptive design. A multistage sampling technique was used to select 500 respondents from private and public schools in Ile-Ife. Quantitative data were collected using self-administered questionnaires. Waist Hip Ratio (WHR) of each respondent was calculated. Body Image Discrepancies (BID) of the respondents were assessed using the 7 silhouette figures provided in the questionnaire. Data were analyzed using SPSS version 16. Statistical significance was tested at 5% level. The results showed that 37.2% of the respondents were obese while 16.4% to be were overweight. Obesity was significantly higher among females, respondents in senior classes, respondents in the upper socioeconomic class and those attending private schools (p<0.05). Majority (61%) of the respondents had BID and this was higher among those obese although the association was not significant (p>0.05). The study concluded that obesity is a common health problem among in-school adolescents in Ile-Ife and there is a high prevalence of BID among the respondents.

Key words: Adolescents, prevalence, obesity, waist-hip ratio, body image discrepancy

INTRODUCTION

The growing alarming rate of obesity worldwide is a great concern to individuals and the general public. World Health Organization publications on obesity described a dramatic increase in obesity prevalence of over 10% in the last 3 decades (15% in 1970s compared to 27% prevalence in 2005). Adolescents have been reported to make up about 20% of the world's population of which 85% live in the developing countries (World Health Organization Consultation, 2000). Excessive fatness in children and adolescents has arguably become a public health problem worldwide. This has also been found to be at an alarming rate in the past three decades among adolescents in many parts of the world (Heseker et al., 1994; Gauthier et al., 2000). Obesity in adolescents is a major concern, not only because of health and social problems in the short term but also because of the consequences in adulthood if it persists. This can affect long-term health and psychosocial life adversely.

In 2000, Bell and Morgan (2000) documented that bully and teasing are usually directed towards obese adolescence which can contribute to poor body image and low self-esteem. Poor body image may have a major effect on future psychological social wellbeing. Obese children have reported to be often labeled as unhealthy, mentally unproductive, generally clumsy, dirty and lazy (Bell and Morgan, 2000). They are often teased and tend to have body dissatisfaction which leads to global psychological dysfunctioning especially among adolescents due to low self esteem (Oliver and Thelen, 1996).

Davidson and Birch (2001) have documented that the negative image developed by obese adolescents is differentiated by a feeling that one's body is ugly and detestable and that others view it with resentment and disdain. Body-image dissatisfaction is believed to be associated with the onset of puberty. Literature on this subject matter suggests that the development of body-image dissatisfaction occurs as much as 3-4 years prior the onset of puberty (Kopelman, 2004). Disturbed body image is said to begin when these adolescents are generally concerned about their appearance and body image (Davidson and Birch, 2001). This feeling is usually associated with self realization and impaired social functioning. Studies in the past have reported that

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female obese adolescents often times think that friends will like them better if they were thinner (Cattarin and Thompson, 1994). Differences in the choice between their present body image and what they wish to be create a discrepancy termed body image discrepancy.

Despite the fact that obese adolescents have been shown to develop a negative self-image and declining degrees of self-esteem associated with unhappiness, isolation and anxiety, studies on their body image among adolescents have been very scarce in the literature especially in the developing countries (Deckelbaum and Williams, 2002). A study on obesity and body image discrepancy is crucial towards finding solutions to obesity and its' psychosocial complications among this special age group hence the need for this study.

MATERIALS AND METHODS

The study was a descriptive cross-sectional carried out in five randomly selected secondary schools in Ile-Ife Central Local government area of Osun state, Nigeria. Respondents consisted of 500 males and female students aged 10-19 years from both junior and senior classes and were selected using multistage sampling technique. Quantitative data collection was through the use of pre-tested self administered, semi-structure questionnaires, with seven silhouette figures. Using these seven silhouette figures, the respondent had to choose a current body image as well as a desired body image. Anthropometric measurements (waist and hip circumference) of the respondents were taken using measuring tape. Waist circumference was obtained by measuring the mid-point between the lower border of rib cage and the mid-iliac crest while the hip circumference was obtained by measuring around the widest area of the buttocks. The Waist-Hip Ratio (WHR) was achieved by dividing the waist circumference by the hip circumference and calculated to the nearest 0.5. WHR greater than 1.0 in males and 0.8 in females has been shown to predict complications from obesity.

The questionnaire elicited information on the demographic characteristics of the respondents. The 7 silhouette figures were schematic figures of women and men ranging from underweight to severe obesity. These figures were rated to determine the Body Image Discrepancy (BID) of the respondents by subtracting the Desired Body Image (DBI) from the Current Body Image (CBI). The BID rating ranged from -6 to 6. Thus, a BID of >0 indicated that the respondent's CBI is heavier than the DBI and BID of <0 indicated CIB is lighter than DBI. BID of 0 means no discrepancy.

Ethically, consent was obtained from the authorities concerned, the local government areas and the participants. Respondents were classified into social classes I-V based on the Oyedeji's classification of socio-economic class (Oyedeji, 1985) by using the

father's occupation as a reliable predictor of family affluence. Data were analyzed using the version 16 of the Statistical Package for Social Sciences (SPSS) and EPI-info version 6 software. Statistical significance was determined at the level of $P<0.05$.

RESULTS

Two hundred and thirty six (47.2%) and 264 (52.8%) of the respondents were males and females respectively. The ages of the respondents ranged from 10-19 years; 233 (46.6%) were late adolescents (15-19 years) and 267 (53.4%) were early adolescents (10-14 years). The mean and median ages were 14.2 and 14 years respectively. About 52% of the respondents were grouped under social class 1 which represents upper socio-economic class.

Classification of obesity using the WHR as shown in Fig. 1 revealed a total of 186 (37.2%) respondents were obese, 82 (16.4%) were overweight and 232 (46.4%) were within the normal range. Most of the males 224 (44.8%) fell within the normal range while most of the females 180 (28.8%) were obese.

Seventy-six (15.2%) of the female respondents were overweight when compared with the male respondents 6 (1.2%) The association between sex and WHR was significant $p = 0.00$.

Obese respondents belonging to the junior and senior classes, based on the WHR technique, were almost equal in number with ratio 1:1. This observation was found to be statistically significant $p = 0.02$. The same can be said for the school types in which the ratio among the obese respondents belonging to either private school or public school was 1:1. This finding also was found to be significant, p-value was 0.02. Though more obese respondents belonged to the early adolescent group compared to the late age group, this relationship was not significant, p-value was 0.25. There
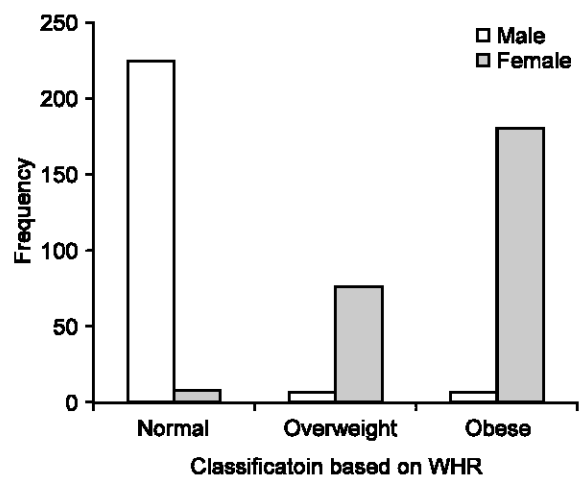

Fig. 1: Classification of obesity amongst the respondents N = 500

were more obese respondents among the social class I and this finding was significant, p-value was 0.02. (Table 1).

About 66% of the respondents had BID (Fig. 2). It was observed that a total of 305 (61%) of the respondents had body image discrepancies while the remaining respondents 172 (34.4%) had no discrepancies, while 23 respondents did not respond to the question.

One hundred and sixty nine (35.2%) of the respondents belonging to the early age group had more discrepancies when compared to the late age group,
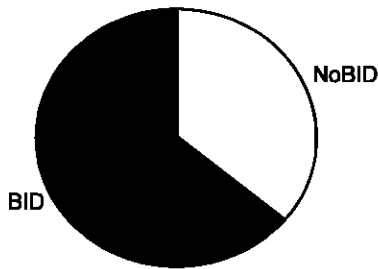

Fig. 2: Frequency of body image discrepancy N = 477

136 (28.5%), this relationship was not significant statistically p = 0.21. More females 171 (35.6%) had body image discrepancies when compared to the male respondents which was 134 (28.1%). This finding was not significant as p-value was 0.059 (Table 3).

One hundred and twenty-four out of the 178 respondents that were obese had BID, while 51 out of the 79 that were overweight had BID. This relationship was not statistically significant.

DISCUSSION

International studies generally show a consistent trend of increasing obesity prevalence among children and adolescents particularly over the past three decades (Rehman *et al.*, 2003). Prevalence of obesity using the WHR technique identified 37.2 and 16.4% of the respondents to be obese and overweight respectively. Majority in both cases were females.

In accordance with previous reports, overweight and obesity prevalence rates varied as a function of gender. De Vito *et al.* (1999) studied 11-19 year old children in Italy and showed that 8.4% were obese with a higher rate in male (9.8%) compared with females (6.5%). This

Table 1: Frequency distribution of WHR of the respondents according to some correlates

Character	Normal (%) N = 232	Overweight (%) N = 82	Obese (%) N = 186	Total (%) N = 500	χ^2	P-value
Sex						
Male	224 (44.8)	6 (1.2)	6 (1.2)	236 (47.2)		
Female	8 (1.6)	76 (15.2)	180 (28.8)	264 (52.8)	4.23	*0.00
Class						
Junior Sec	128 (25.6)	31 (6.2)	91 (18.2)	250 (50.0)		
Senior Sec	104 (20.8)	51 (10.2)	95 (19.0)	250 (50.0)	7.447	*0.02
School						
Private	156 (31.2)	50 (10.0)	94 (18.8)	300 (60.0)		
Public	76 (15.2)	32 (6.4)	92 (18.4)	200 (40.0)	12.041	*0.02
Age groups						
Early (10-14)	129 (25.8)	37 (7.4)	101 (20.2)	267 (53.4)		
Late (15-19)	103 (20.6)	45 (9.0)	85 (17.0)	233 (46.4)	2.771	0.25
Socioeconomic class						
I	141 (28.8)	36 (7.3)	79 (16.1)	256 (52.2)	24.713	*0.02
II	19 (3.9)	12 (2.4)	28 (5.7)	59 (12.0)		
III	21 (4.3)	14 (2.9)	41 (8.4)	76 (15.5)		
IV	19 (3.9)	7 (1.4)	13 (2.7)	39 (8.0)		
V	28 (5.7)	11 (2.2)	21 (4.3)	60 (12.2)		

*p<0.05 (statistically significant)

Table 2: Respondents' distribution of Body Image Discrepancy (BID) according to WHR and sex

WHR	No BID (%)	BID present (%)	Total (%)	χ^2	P-value
Male					
Normal	86 (38.2)	127 (56.4)	213 (94.7)		
Overweight	0 (0.0)	6 (2.7)	6 (2.7)		
Obese	5 (2.2)	1 (0.4)	6 (2.7)		
Total	91 (40.4)	134 (59.6)	225 (100.0)	**10.902	*0.04
Female					
Normal	4 (1.6)	3 (1.2)	7 (2.8)		
Overweight	28 (11.1)	45 (17.9)	73 (29.0)		
Obese	49 (19.4)	123 (48.8)	172 (68.3)		
Total	81 (32.1)	171 (67.9)	252 (100.0)	**4.175	0.124

*p<0.05 (statistically significant). **Likelihood ratio where cell is <5

Table 3: Distribution of Body Image Discrepancy (BID) of Respondents According to some correlates

Character	No BID (%) N = 172	BID present (%) N = 305	Total (%) N= 477	χ^2	P-value
Sex					
Male	91 (19.9)	134 (28.1)	225 (47.2)		
Female	81 (17.0)	171 (35.1)	252 (52.8)	3.553	0.06
Class					
Junior Sec	79 (16.6)	155 (32.5)	234 (49.1)		
Senior Sec	93 (19.5)	150 (31.4)	243 (50.9)	1.052	0.31
School					
Private	109 (22.9)	183 (38.4)	292 (61.2)		
Public	63 (13.2)	122 (25.2)	185 (38.8)	0.527	0.47
Age group					
Early (10-14)	85 (17.8)	169 (35.4)	254 (53.2)		
Late(15-19)	87 (18.2)	136 (28.5)	223 (46.8)	1.586	0.21
Family					
Monogamous	134 (28.1)	219 (45.9)	353 (74.0)		
Polygamous	38 (8.0)	86 (18.0)	124 (26.0)	2.130	0.14

*$p<0.05$ (statistically significant)

is however contrary to this study in which the prevalence of obesity was found to be higher in females than in males and this was significant with p-value <0.05. This finding is consistent with study by Ansa et al. (2001) in which the prevalence of obesity and overweight was also higher in females. The National Health and Nutrition Examination Survey (NHANES) (National Center for Health Statistics, 1999), done in the United States also observed that girls had higher prevalence of obesity than the boys.

A study by Monsen et al. (2002) observed that obesity was commoner among the late adolescents (ages 15-19 years). A contrary result was observed in this study in which obesity was commoner among the early adolescents (ages 10-14 years). This is also contrary to study by Rehman et al. (2003) which showed that those belonging to the late age group were more prone to obesity than early age group.

In most countries, lower socioeconomic groups have significantly higher prevalence of obesity compared to the upper and middle classes (Tennat et al., 2003; Doak et al., 2002), These findings are however contrary to the findings of this study in which majority of the obese respondent belonged to socioeconomic class 1 and the association between obesity and socioeconomic class was found to be significant. It can therefore be assumed that respondents belonging to the upper socioeconomic class are often exposed to factors that promote obesity due to their affluence. This is similar to study by Popkin (2002) where significant association between obesity and socioeconomic class were also found.

In this study, majority 64% of the respondents had body image discrepancies, BID. Adolescents are often conscious of their body shapes and sizes. This may account for the BID found among the non obese respondents. Study by Penny Gordon-Larsen 1989

among Urban Philadelphia female adolescents showed that most of the respondents had significant BID. This is similar to this study as more females, 171 (35.1%) had BID when compared to the males, 134 (28.1%) though this finding was not significant p = 0.06. The high incidence of BID among females may be due the fact that females in general irrespective of their ages are often unsatisfied with the way they look. This creates a disparity and this is particularly common among adolescent females who have role models. Among those obese in this study, BID was commoner among the females than males. The same reasons may account for this.

One can conclude from this study that obesity is prevalent among adolescents in the study area and body image discrepancies also exist among the obese ones. Efforts at tackling obesity are therefore recommended to curb this menace in order to avert future psychosocial consequences among the adolescents.

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