Pattern and predictors of psychosocial disorders among overweight and obese children in Enugu, Southeast Nigeria

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Background. Obesity in children is recognised as a public health problem worldwide. This is due to the high prevalence rate, as well as the associated adverse health and psychosocial effects. Psychosocial disorders negatively impact on children.
Objectives. This study aims to determine the pattern and predictors of psychosocial disorders among overweight and obese children in Enugu, Nigeria.
Methods. A descriptive cross-sectional study among adolescents attending secondary schools in Enugu was conducted. Sampling followed stratified and multi-staged methods. Participants' weight and height were measured and their body mass index (BMI) determined. Questionnaires were also used and the information obtained included psychometric measurements. Data was analysed using SPSS version 19. χ^2 and logistic regressions were carried out where a p-value ≤0.05 was considered significant.
Results. The mean age (standard deviation (SD)) of the 200 students included in the study was 12.9 (1.8) years. Most of the subjects suffered from depression (46%) and there was a significant association between anxiety and obesity in females (p=0.03), who were ~3 times more likely to be anxious than boys (OR 2.6; 95% confidence interval (CI) 0.78 - 8.36). Low self-esteem was also found to be closely associated with obese girls (p=0.002), who were about 3 times more likely to have a low self-esteem compared with males (OR 2.7; 95% CI 0.95 - 7.55). Obesity was stigmatised (p=0.002) and obese students were almost 5 times more likely to feel stigmatised than overweight students (OR 5.01; 95% CI 1.80 - 13.9).
Conclusion. Obesity was directly associated with stigma and, while female gender predicts anxiety and low self-esteem, obesity itself was a predictor of stigmatisation among obese children.

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The burden of obesity has escalated over the last two decades in developing countries, while developed countries have reached pandemic levels.[1] The International Obesity Task Force (IOTF) reported that 1 in 10 children are overweight worldwide. In total, estimates show that there are ~155 million children and adolescents who are overweight and 30 - 45 million who are obese.[2,3] In fact, obesity in children and adolescents is now recognised as a major public health concern owing to alarming trends in the prevalence, severity and occurrence of adverse health and psychosocial consequences.[1]

The developing world is likely to suffer a greater health and economic burden from obesity. For instance, it was estimated that between 1998 and 2025, diabetes caused by obesity would double to 300 million with ~225 million cases occurring in the developing world.[4] For nations whose economic and social resources are limited, the result could be disastrous. This is due to both the direct and indirect medical costs associated with obesity that would become a major burden for healthcare systems, including those in Nigeria. Globally, the World Health Organization (WHO) estimates the economic cost of obesity to be ~2% to 7% of total healthcare costs per year.[4]

Unfortunately, overweight children and adolescents are at increased risk of various psychological and social problems. These impact negatively on the economy of a nation, and may impair the psychological development, quality of life, academic and social performance of the overweight child, when compared with a child of normal weight.[5-7] It has been documented that weight-based stigma increases the susceptibility of children to depression, low self-esteem, poor body image, maladaptive eating behaviors and exercise avoidance.[8] The low self-esteem noted in children with paediatric obesity is said to be marked and often starts early in their life.[5,9,10] The weight-related stigma and discrimination could also be a mediating factor in the development of psychological ill-health as well as affect the academic performance of these children in their required age-specific developmental tasks.[5]

The degree of obesity, though, appears to be an independent risk factor for common mental health disorders. Research has suggested that severe obesity puts individuals at greater risk of depression.[10,11] Many may not present with obvious depressive symptoms but with somatic symptoms which may confound the diagnosis. Depression in an obese child may also present in the form of oppositional defiant symptoms, aggressive behavior, anger, bullying (where the obese child is a bully rather than a victim), fatigue, poor academic performance, suicidal thoughts and attempted suicide.[9] These factors have been noted in this sample population at a frequency slightly greater than that of the general population.

In Nigeria, there are limited data on the pattern as well as predictors of psychosocial disorders among overweight and obese children. We are not aware of any study in Africa on the predictors of psychosocial disorders among overweight and obese children. We hypothesise that the overweight and obese children in Enugu will have psychological disorders as well as social problems. The aims of the study are to determine the pattern of psychological disorders and social problems among overweight and obese children and to determine the predictors of these disorders.

Methods

Study design

This was a descriptive cross-sectional study carried out among secondary schoolchildren aged 10 - 18 years in the Enugu metropolis of Nigeria from April to June 2015.

Study area

The metropolis is made up of three local government areas – Enugu North, Enugu East and Enugu South, with a total of 123 registered secondary schools. This is comprised of 39 public (government) and 84 private secondary schools (based on information from Enugu State Ministry of Education).

Ethical consideration

Ethical clearance for the proposal was approved by the University of Nigeria Teaching Hospital Health Research and Ethics Committee (NHREC/05/01/2008B-FWA00002458 – IRB00002323). Furthermore, approval was obtained from the Enugu State Ministry of Education, chairmen of private schools, principals and teachers as well as parents of the respondents. Informed consent – both verbal and written – were obtained from each child's parents/guardian. Following acquisition of consent, they were duly educated on the need and benefits of the study, the measurements required and how they would be collected. Confidentiality was maintained throughout and after the study.

Sampling technique

Multi-staged sampling involving stratified and simple random methods was used. The number as well as the ratio of public to private schools in the different local government areas were used to determine the number of students selected in the area. In each school selected, the participants were selected by simple random sampling using a statistical table of random numbers. Where the selected participant's calculated body mass index (BMI)was either in the range of normal or underweight, after measurement of the weight and height, he/she was excluded from the study. The height of the subject was measured to the nearest centimetre (sensitivity of 0.5 cm) using a Seca stadiometer (Model 786 2021994 Seca GmbH & Co.) with the subject barefoot or wearing a pair of socks. The participant's weight was measured using an electronic weighing scale with a sensitivity of 0.1 kg. Both the height and weight were measured twice and if there was disparity, a third measurement was taken and an average of the three measurements used. BMI was determined based on age and sex, using the Centers for Disease Control (CDC) BMI calculator for children and teens.[12] 'Overweight' was defined as a BMI between the 85th and 94th percentiles, while obesity was defined as a BMI ≥95th percentile.[12] All normal or underweight children, those on drugs with effects on weight and psychotherapy, all overweight and obese children who did not assent or consent and those whose parents or guardians did not consent to participate were excluded.

Data collection

A pretested, self-administered questionnaire was given to the selected students after obtaining informed assent/consent, and due explanation and education on the content, purpose and benefits of the study was provided. Some of the information required included biodata, socioeconomic class and psychometric measurements. Socioeconomic class of a child was obtained by calculating the socioeconomic class of the parents using the method proposed by Oyedeji.[13]

Psychometric measures

The psychometric scales used included Becks Depression Inventory II (BDI II), Revised Children Manifest Anxiety Scale (RCMAS), Rosenberg Self-Esteem Scale (RSES), and Internalized Stigma of Mental Illness Scale (ISMI). Both the BDI II and RCMAS have been validated in Nigeria using adolescents aged 13 - 18 years and primary schoolchildren respectively.[14,15]

Beck's Depression Inventory

The BDI II was developed in response to the publication of the Diagnostic and Statistical Manual of Mental Disorders (DSM IV-TR) due to changes in the diagnostic criteria of major depressive disorders. It is a 21-item, multiple choice, self-rated inventory used to assess the cognitive, emotional and vegetative symptoms associated with depression in which the individual chooses 1 of 4 statements in each item that applies best to his/her feelings over the past 2 weeks. Each answer is scored on a scale of 0 - 3. Ratings are summed up to obtain total scores. The cut-offs used are 0 - 13 for minimal depression; 14 - 19 for mild depression; 20 - 28 for moderate depression; and 29 - 63 for severe depression. Higher total scores indicate increasingly severe depressive symptoms. The BDI II was designed to detect and analyse the intensity of depression in individuals. It correlates positively (r=0.71) with the Hamilton Depression Rating Scale (HAM-D) and has a high 1-week test-retest reliability (r=0.93).[16] The internal consistency of the HAM-D is high (α=0.91), with a sensitivity of 0.91 and specificity of 0.97 at a cut-off score of 18 and above. It has a positive predictive value of 0.88 and a negative predictive value of 0.98.[17]

Revised Children Manifest Anxiety Scale (RCMAS)

The RCMAS was designed to assess the degree and quality of anxiety in children and adolescents between 6 and 19 years. It was based on the Children Manifest Anxiety Scale of 1956 which was devised from The Manifest Anxiety Scale developed in 1951.[18,19] RCMAS is a 37-item self-report inventory used to measure anxiety in children and adolescents for clinical purposes – diagnosis and treatment evaluation, educational settings and research purposes.[20] The RCMAS consists of 28 Anxiety items and 9 Lie (social desirability) items. The 28 items relate to subjective, physiological and motoric indexes of anxiety that can be summed to form a total general anxiety score. These items can also be divided into physiological anxiety, worry/oversensitivity, and social concerns/concentration. The remaining 9 items form a Lie scale, which can be used to assess a youth's tendency to present themselves favourably. Each item is given a score of one for a 'yes' response, yielding a total anxiety score. Stallard *et al.*[21] recommended that an overall cut-off point of 19 out of 28 be used to identify children experiencing clinically significant levels of anxiety. This was the cut-off point employed in our study. The RCMAS has an internal consistency coefficient of r=0.8, a test-retest reliability of 0.6 - 0.88 and in terms of convergent validity, correlates with Screening for Children with Anxiety Related and Emotional Disorder (SCARED) (r=0.85), as well as the State Trait Anxiety Inventory for Children (STAIC) (r=0.85, p=0.05).[20,22-24]

Rosenberg Self-Esteem Scale (RSES)

The Rosenberg Self-Esteem Scale is the most widely used measure of global self-esteem. It is a 10-question Likert scale, designed to represent a continuum of self-worth statements.[25] It is answered on a 4-point scale from strongly agree (3) to strongly disagree (0). Total scores range from 0 to 30 with higher scores representing lower self-esteem.[26] The scale measures self-esteem by asking the respondents to reflect on their current feelings. Five of the items are positively worded while the remaining five have negatively worded statements. While some are scored as they are, others are scored in reverse order. Scores <15 suggest low self-esteem while scores ≥15 suggest normal self-esteem. The scale has been translated into several different languages and used in cross-cultural studies involving at least 53 different countries. The RSES also has an adequate internal consistency of α=0.87, is highly reliable with a 2-week test-retest correlation in the range of 0.82 to 0.88, and has a minimum coefficient of reproducibility of 0.9 with Cronbach's alpha for various samples in the range of 0.77 to 0.88.[26-28] The RSES is closely related to the Cooper Smith Self-Esteem Inventory.

Internalized Stigma of Mental Illness Scale (ISMI)

The ISMI is commonly used to measure internalised stigma and offers clinicians and clinical researchers a confirmable and viable target for general psychotherapeutic interventions.[29] The ISMI scale was developed to measure the internalised stigma of people diagnosed with a mental illness. Worldwide, the ISMI scale has been used as a measure of internalised stigma for people with diseases such as schizophrenia, depression, leprosy and AIDS. The ISMI contains 29 items which produce 5 subscale scores (including stigma and discrimination) and a total score. Each score is calculated by adding the item scores together and then dividing by the total number of answered items. If any item is unanswered, the total number to be divided by is reduced. The resulting score ranges from 1 - 4. A total score >2.5 signifies high internalised stigma. For calculating discrimination experience on this scale, the scores on the single items are summed and divided by the total number of questions. The higher the mean score, the greater the evidence of discrimination.[30] The ISMI has an internal consistency of reliability coefficient of α=0.90, with a test-retest reliability of r=0.92 and p=0.05.[27]

Data analysis

Data from 200 students were analysed using SPSS version 19. The mean was used to summarise quantitative variables while frequency and percentages were used for qualitative variables where applicable. Tables were constructed as appropriate. χ^2 tests were used to establish associations between sociodemographic variables (age, sex, social class) as well as BMI with presence or absence of psychological disorders and social problems while binary logistic regression was used to identify predictors of psychological disorders and social problems. Level of significance was at p-value ≤0.05.

Results

Of the 200 students studied, 33.5% (n=67) were overweight and 66.5% (n=133) obese. This total is made up of 136 (68.0%) females and 64 (32.0%) males, giving a male to female ratio of 1:2. Their mean (standard deviation (SD)) age was 12.9 (1.8) years old. Most of the students belonged to the upper social class (84.5%). A total of 157 students were in their early adolescence while 43 were in their late adolescence (Table 1).

There were essentially 2 major psychological disorders (depression and anxiety) and 3 major social problems (self-esteem, discrimination and stigmatisation) studied among the overweight and obese students. Among the 200 students, depression was found in 46% (n=92), anxiety disorder among 14% (n=28), 23% (n=46) had low self-esteem, 28% (n=56) suffered discrimination while 27% (n=54) were also stigmatised.

Depression among these children ranged from mild (21.5%; n=20/92) to severe (8.5%; n=8/92). The difference was not statistically significant. Those children in the middle class were about 3 times more likely (OR 2.96; 95% CI 1.18 - 7.43), while those in the lower class were about 1.3 times less likely to be depressed, compared with the upper class (OR 0.80; 95% CI 0.14 - 4.64) (Table 2). Anxiety disorder was more common among the females compared with the males and this was statistically significant (χ^2=4.695, p=0.030). On multivariate analysis, the females were about 2.6 times more likely to have anxiety disorder compared with the males (OR 2.56, 95% CI 0.78 - 8.36) (Table 2).

Table 1. Sociodemographic and BMI distribution of students

	Frequency, n (%)
Age range (years)	
10 - 14	157 (78.5)
15 - 19	43 (21.5)
Sex	
Male	64 (32)
Female	136 (68)
Social class	
Upper	169 (84.5)
Middle	25 (12.5)
Lower	6 (3.0)
BMI (kg/m^2)	
Overweight	67 (33.5)
Obese	133 (66.5)

BMI = body mass index.

Among the major social problems, obesity was associated with stigmatisation and this was statistically significant (χ^2=9.409; p=0.002). Those obese children were about five times more likely to feel stigmatised than the overweight (OR 5.01; 95% CI 1.80-13.90) (Table 3). Low self-esteem was more common among the females compared with males and this was statistically significant (χ^2=9.866, p=0.002). On multivariate analysis, the females were ~3 times more likely to have low self-esteem than males (OR 2.68, 95% CI 0.95 - 7.55). The late adolescents were ~2 times more likely to feel discriminated against than the early adolescents (OR 0.43; 95% CI 0.16 - 1.15). Those children in the middle class were ~2 times less likely (OR 0.65; 95% CI 0.04 - 11.54) and those in lower class ~2 times more likely to feel discriminated against than those in the upper class (OR 1.78; 95% CI 0.09 - 36.84) (Table 3).

Discussion

For middle- and low-income countries, including Nigeria, public awareness and education on mental health is often inadequate due to limited resources. However, the most widespread consequence of childhood obesity is psychosocial, yet most paediatricians do not offer treatment to obese children and adolescents in the absence of comorbid conditions. The pattern of psychosocial disorders among overweight and obese children in Enugu is very worrisome. There is a high level of depression among these children. Depression is a common mental disorder presenting with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite and poor concentration and academic performance. This study found depression among these children higher than that of the general population (3% - 15%) and unfortunately it may persist into adulthood.[10,31] While 0.4% - 5% of the general population suffering with depression is classified as severe, it was found that as much as 8.5% of the participants in this study, primarily girls, were severely depressed. This is because depression and obesity have been found to have bidirectional associations and both are widespread problems with major public health implications.[10,11,32-34] This high level of depression may be related to body dissatisfaction, poor body image, discrimination, social isolation and weight-based teasing by peers and/or parent(s) experienced on a daily basis. Studies have shown that peer victimisation and body dissatisfaction predicts depression among adolescents.[35-37] Depression may be even worse among these young women, considering the fact that relationships and marriages are conceived during late adolescence in this environment. An association

Table 2. Association between psychological disorders and sociodemographics and BMI (*N*=200)

	Presence, *n* (%)	Absence, *n* (%)	Bivariate analysis χ^2	Bivariate analysis *p*-value	Multivariate analysis OR (95% CI for OR)
Anxiety					
Age range (years)					
10 - 14	20 (12.7)	137 (87.3)	0.965	0.326	NA
15 - 18	8 (18.6)	35 (81.4)			
Sex					
Male	4 (6.3)	60 (93.8)	4.695	0.030	
Female	24 (17.6)	112 (82.4)			2.56 (0.78 - 8.36)
Social class					
Upper	22 (13.0)	147 (87.0)	3.189	0.203	NA
Middle	6 (24.0)	19 (76.0)			
Lower	0 (0.0)	6 (100)			
BMI					
Overweight	7 (10.4)	60 (89.6)	1.056	0.304	NA
Obese	12 (15.8)	112 (84.2)			
Depression					
Age range (years)					
10 - 14	69 (43.9)	88 (56.1)	1.237	0.266	NA
15 - 18	23 (53.5)	20 (46.5)			
Sex					
Male	27 (42.2)	37 (57.8)	0.551	0.458	NA
Female	65 (47.8)	71 (52.2)			
Social class					
Upper	74 (43.8)	95 (56.2)	3.982	0.137	
Middle	16 (64.0)	9 (36.0)			2.96 (1.18 - 7.43)
Lower	2 (33.3)	4 (66.7)			0.80 (0.14 - 4.64)
BMI (kg/m^2)					
Overweight	35 (52.2)	32 (47.8)	1.579	0.209	
Obese	57 (42.9)	76 (57.1)			NA

OR = odds ratio; NA = not applicable; BMI = body mass index.

between obesity and depression has been found among obese women but not in men.[32,33,35] Unfortunately, though depression is common among these children, most doctors miss the diagnosis.

Based on the fact that these disorders are causally linked, the implication is that through dysregulated stress systems or through unhealthy lifestyle, these children may overeat regularly and become increasingly obese, leading to worsening depression.[33] The impact of this high rate of depression is alarming when one considers the medical and economic burden on a fragile economy. It may contribute significantly to the burden of mental ill-health in Enugu over time, poor academic performance of the children, musculoskeletal pains and increased risk of substance abuse and suicidal ideation compared with normal-weight peers. These medical implications, if they occur, burden the fragile Nigerian health system. Economically, the cost of illness due to depression would be enormous, depression being the leading cause of disability worldwide in terms of total years lost due to disability.[38]People who are obese and depressed are more likely to experience impairments in multiple domains including employment as well as physical and social functioning. Therefore, the high burden of depression among overweight and obese children portends a marked impediment in the future work force. Obviously, the coexistence of the disorders will be disastrous for poor nations such as Nigeria.[31]

There was no significant association between anxiety disorder and children who are obese or overweight. This is similar to other studies.[39,40] However, between the genders, anxiety was more closely associated with girls. This may have resulted from weight-related discrimination, stigmatisation and teasing which may be very distressing for the young girls, especially in the adolescent stage of personality development in which they develop self-identity. This finding agrees with other studies that obesity may be more strongly related to anxiety disorders in women than in men.[8]

Self-esteem relates with an individual's social, emotional, behavioral and mental development – how individuals perceive themselves and whether he or she feels that they are valued. Low self-esteem in children has been linked with negative consequences such as behavioral disorders including aggression, delinquency, depression, and other emotional concerns.[41]This study has documented a high prevalence of low self-esteem among overweight and obese Nigerian children similar to the findings by Wang *et al.*[42] This finding is found to be true as the literature has consistently shown an association between obesity and self-esteem according to sex and pubertal status, suggesting a more negative self-esteem among pubertal females.[43,44]In this study low self-esteem was also associated with the females, corroborating that female gender is a predictor of negative self-esteem. Although reports on self-esteem among overweight and obese children elsewhere has been inconsistent, this result agrees with the findings of Wang *et al.*,[42] and Friedlander.[44] Low self-esteem was also found to be more common among the late adolescents in this study. This is similar to the finding of Bodiba.[45] However, this might have been because during late adolescence, children become more aware of their body and shape. It is at this stage that body dissatisfaction, weight-based teasing, social isolation,

Table 3. Association between major social problems and sociodemographics and BMI

	Presence, *n* (%)	Absence, *n* (%)	Bivariate analysis χ^2	Bivariate analysis *p*-value	Multivariate analysis OR (95% CI for OR)
Stigma					
Age range (years)					
10 - 14	40 (25.5)	117 (74.5)	0.859	0.354	NA
15 - 18	14 (32.6)	29 (67.4)			
Sex					
Male	17 (26.6)	47 (73.4)	0.009	0.924	NA
Female	37 (27.2)	99 (72.8)			
Social class					
Upper	44 (26.0)	125 (74.0)	0.519	0.771	NA
Middle	8 (32.0)	17 (68.0)			
Lower	2 (33.3)	4 (66.7)			
BMI (kg/m^2)					
Overweight	9 (13.4)	58 (86.6)	9.409	0.002	
Obese	45 (33.8)	88 (66.2)			5.01 (1.80 - 13.90)
Discrimination					
Age range (years)					
10 - 14	40 (25.5)	117 (74.5)	2.304	0.129	
15 - 18	16 (37.2)	27 (62.8)			0.43 (0.16 - 1.15)
Sex					
Male	21 (32.8)	43 (67.2)	1.081	0.298	NA
Female	35 (25.7)	101 (74.3)			
Social class					
Upper	43 (25.4)	126 (74.6)	5.890	0.053	
Middle	12 (48.0)	13 (52.0)			0.65 (0.04 - 11.54)
Lower	1 (16.7)	5 (83.3)			1.78 (0.09 - 36.84)
BMI (kg/m^2)					
Overweight	16 (23.9)	51 (76.1)	0.848	0.357	NA
Obese	40 (30.1)	93 (69.9)			
Self-esteem					
Age range (years)					
10 - 14	34 (21.7)	123 (78.3)	0.745	0.388	NA
15 - 18	12 (27.9)	31 (72.1)			
Sex					
Male	6 (9.4)	58 (90.6)	9.866	0.002	2.68 (0.95 - 7.55)
Female	40 (29.4)	96 (70.6)			
Social class					
Upper	38 (22.5)	131 (77.5)	0.514	0.773	NA
Middle	7 (28.0)	18 (72.0)			
Lower	1 (16.7)	5 (83.3)			
BMI (kg/m^2)					
Overweight	20 (29.9)	47 (70.1)	2.670	0.102	1.28 (0.53 - 3.12)
Obese	26 (19.5)	107 (80.5)			

OR = odds ratio; NA = not applicable; BMI = body mass index.

and exclusion based on weight may come into effect, ultimately promoting low self-esteem and poor social interaction that leads to poor development. Unfortunately, low self-esteem tends to linger into adulthood and predicts poor mental health.[41] The effect may be significant, especially in stressful environments. Low self-esteem coupled with overweight/obesity influences the performance of adolescents in their required age-specific developmental tasks and their well-being, leading to poor academic performance, aggression, poor development of social skills, early onset of substance abuse and low quality of life.[46,47]

Furthermore, in this study obesity was found to be associated with stigma. Again, this must have resulted from poor body image and body dissatisfaction resulting from weight-based teasing, derogatory words from peers, teachers and parents, aggressive behavior and stereotyping.[48] This may have been more prevalent among the girls, considering that thin bodies are viewed as physically attractive. The social consequences of being overweight and obese are serious and detrimental. These children are often targets of teasing, social isolation, prejudice and bullying and are susceptible to negative attitudes in multiple domains of living, including schools, their homes and interpersonal relationships.[48,49] This stigmatisation has the potential to affect the cognitive function of these children leading to lower educational attainment and lower self-esteem.[50] This effect is probably more prominent in the obese children compared with the children who are overweight, as people with obesity are stereotyped as lazy, less competent, lacking in self-discipline, non-compliant, sloppy and worthless.

Discrimination diminishes an individual's self-worth. Discrimination against obese individuals is a harmful, pervasive and significant social problem that needs to be addressed early, concretely, and as part of a child's or teen's obesity treatment regimen.[51]As much as 28% of the overweight and obese children in Enugu metropolis feel discriminated against as a result of their weight. This feeling of discrimination might have contributed to the social anxiety, lower self-esteem and depression that these children suffer. The findings in this study agree with findings of other studies.[52,53] Obese people, especially those who perceive themselves as overweight, often experience weight-related discrimination and have difficulty making friends.[51,52] This weight-related perceived discrimination might have been felt more by the late adolescents as they are more aware of their body image and eager to start relationships.[52,53] This perceived weight discrimination would have arisen from weight-related teasing by peers and relatives, social exclusion, stigmatisation and body dissatisfaction. The effect of this perceived weight discrimination is also hazardous as it has been found to contribute to maladaptive eating behaviours among obese individuals, leading to increases in the severity of obesity and is likely to increase vulnerability to depression, low self-esteem, low self-worth, guilt and poor body image.[10,54]

Study limitation

There was no control group for comparison with the overweight and obese children.

Conclusion and recommendations

Overweight children and childhood obesity are emerging problems within the African setting, especially among the upper socioeconomic class, and is associated with many psychosocial disorders. Depression is the most common disorder among obese and overweight children, and is higher compared with the general population. Female gender among obese children predicts anxiety and low self-esteem. Obesity predicts only stigmatisation but not depression, anxiety, discrimination or self-esteem but is significantly associated with stigma.

A comprehensive assessment of overweight and obese children both in the school and clinical setting is essential. In the school setting, the counselor should help form an obesity support group and discuss being overweight and obese with affected children, the challenges and impairments, the need and modalities to achieve weight loss with emphasis on physical activity and how to help each other overcome the psychological and social problems associated with obesity. Intense school health education should aim to mitigate isolation, exclusion, stereotyping, stigmatisation and discrimination against overweight and obese children. There is also an urgent need to enact laws in Nigeria enforcing private schools to provide physical recreation facilities and adequate time in the curriculum for physical activity. It was observed that private schools have little or no recreational facilities. In the clinical setting, paediatricians managing overweight or obese children for any condition should make time to assess for psychological disorders and refer appropriately.

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