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Revista de cercetare și intervenție socială

ISSN: 1583-3410 (print), ISSN: 1584-5397 (electronic)

Selected by coverage in Social Sciences Citation Index, ISI databases

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Revista de cercetare și intervenție socială, 2015, vol. 49, pp. 205-215

The online version of this article can be found at:
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Published by:

Expert Projects Publishing House



On behalf of:

„Alexandru Ioan Cuza” University,

Department of Sociology and Social Work

and

Holt Romania Foundation

REVISTA DE CERCETARE SI INTERVENTIE SOCIALA

is indexed by ISI Thomson Reuters - Social Sciences Citation Index
(Sociology and Social Work Domains)



Psychosocial Implications of Childhood Obesity

Laura Mihaela TRANDAFIR¹, Dana Teodora ANTON-PADURARU²,
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Abstract

Obesity is currently a significant public health problem, as we have witnessed a dramatic increase in the number of obese and overweight children worldwide. Childhood obesity is more than a physical problem. The psychosocial consequences of overweight and obesity are less clear than physiological consequences. In this review paper we aim to describe the main psychosocial dimensions of childhood obesity: stigmatization, altered cognitive performance, low self-esteem and respect for one's body, emotional disorders. Stigmatization, victimization and teasing are related to social non-acceptance and discrimination of overweight children and adolescents. The quality of life of obese children is lower due to their poorer physical and mental health, or to their deficient social functioning and poorer school performance.

Keywords: emotional disorders, obesity, psychosocial, stigmatization, children.

Introduction

Obesity is a chronic disorder of the state of nutrition characterized by an increase in body weight due to excessive adipose tissue, which occurs when the calorie intake exceeds the caloric needs of a body with low energy expenditure. Obesity is currently a significant public health problem, as we have witnessed a dramatic increase in the number of obese and overweight children worldwide since the 1990's; obesity prevalence increased from 4.2% in 1990 to 6.7% in

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2010. Given today's obesogenic social environment, we expect childhood obesity prevalence to reach 9.1% by 2020, unless adequate actions are taken materialized in public health policies and economic strategies. (de Onis, Blossner & Borghi, 2010). The statistical and epidemiological data on childhood obesity are relatively scarce in Romania. A prevalence study conducted by the World Health Organization in 2006 revealed that obesity prevalence was 14% in girls and 19% in boys. The first HBSC (Health Behavior in School-aged Children) research in Romania occurred in 2005-2006 (the study was published in the IASO report, in London, in 2009) and was conducted on children aged 11 to 15; according to this research, 14.7% of the girls and 8.7% of the boys were overweight (Olteanu, 2010). According to the data provided by the National Center for Health Assessment and Promotion in Romania, obesity prevalence in children aged between 3 and 16 grew from 0.7% in rural areas and 1.6% in urban areas, to 1.5% and 3.1%, respectively, between 2004 and 2010. As concerns Iasi County, the available data on the year 2012 show that obesity prevalence reaches 1.24% in children between 0 and 18 years of age, with significant differences between the various age groups: 0-4 years – 0.1%; 4-7 years – 0.36%; 7-11 years – 1.32%; 11-15 years – 2.21% and 15-18 years – 1.12%. These data were collected further to a health assessment research conducted on 71,277 children coming from various pre-university educational institutions in Iasi County.

The causes of obesity are numerous and they originate in a harmful combination between genetic predispositions to it, today's food eating habits and effective media and marketing campaigns, which make up the characteristics of the current obesogenic environment. All these factors support weight gain in children and adolescents due to their overeating and sedentary lifestyle. Obesity in children and adolescents is a significant adult obesity predictor and a risk factor for the many complications that it may trigger: on the one hand, organic complications (cardiovascular diseases, hypertension, type 2 diabetes mellitus, X metabolic syndrome, sleeping apnea, some forms of cancer), and, on the other hand, its psychosocial complications. The psychological problems due to obesity in children and adolescents are often as important as organic complications. Psychosocial factors are defined as constituents of the child's or adolescent's social environment, which contribute to the child's or adolescent's overweight or obesity, and they refer to: stigmatization, altered cognitive performance, low self-esteem and respect for one's body, emotional disorders (Zametkin, Zoon, Klein & Munson, 2004).

Social stigmatization of obese children

Stigmatization is related to social non-acceptance/rejection and discrimination of overweight children and adolescents (Lobstein, Baur & Uauy, 2004). Obesity is one of the most stigmatising and least socially acceptable conditions in children. In a study conducted in 2007, Puhl & Latner showed that negative attitudes and prejudice against obese children develop early in a child's life, since as early as 3 years of age children associate their classmates' obesity with negative traits such as lazy, isolated, ugly, and unhappy and having few friends. School-age children associate normal body weight with intelligence, health, happiness and popularity among one's classmates having the same age (Puhl & Latner, 2007). An argument capable to account for the fact that prejudice worsens in children as they grow older, may be that they are in relation with the children's dissatisfaction with their own body. In a study on the stigmatization experienced by overweight teenage girls, 96% of the 50 obese girls included in the study reported weight-based stigmatizing experiences, the most common of which were jokes and name calling. Their classmates were the authors of most of these malicious remarks and school was the environment where most of these experiences occurred. The girls included in this study had to stand their classmates' stigmatization throughout junior high school, but at the same time they complained that they had not been taught to effectively cope with these traumatizing experiences. Surprisingly, some studies revealed that some of the overweight and obese children themselves share negative opinions and attitudes towards obesity (Puhl *et al.*, 2007).

Unlike other stigmatized social groups (for instance, disabled individuals) that may arouse compassionate reactions, obese children do not get any support or protection from their classmates (Puhl *et al.*, 2007). There are cases of obese children severely stigmatized by their classmates, who even resorted to the extreme act of suicide. The childhood obesity is a major cause of rejection and marginalization and the special programs are needed to support and provide counselling to children with eating disorders. The psychological stress of social stigmatization can cause low self-esteem which, in turn, can hinder academic and social functioning and persist into adulthood (Swartz & Puhl, 2003). As what concerns the long-term impact of obese children stigmatization, overweight adolescents were found to have a lower education level, to be less lucky in their romantic relationships and also, later, in getting married, as well as to enjoy a lower socio-economic level than their normal weight classmates. A schooling environment which is hostile to obese adolescents may play a decisive role in the evolution of the future adult. Also, the trauma that these obese children experience on account of their stigmatization fuels their stress, unhealthy eating habits and bulimia nervosa.

Teasing and victimization

Weight-related victimization and teasing are associated with the stigmatization phenomenon affecting obese children; yet, it manifests itself on a personal level. Victimization involves a person who is subjected to the negative actions of other people who intend to harm the former. This action may be direct, using physical violence or verbal abuse, or indirect, by excluding an individual on purpose from social activities, with the ultimate goal of alienating him/her from his/her friends. Verbal abuse generally involves the victim's physical appearance, and especially that person's overweight (Haines, Neumark-Sztainer, Hannan, & Robinson-O'Brien, 2008), and causes psycho-social damage. Intimidation was defined as abuse against another person, by calling him/her mean and unpleasant names. Teasing primarily originates in that individual's classmates who are usually the main source of teasing. It may, nevertheless, involve other family members and even foreigners (Neumark-Sztainer, Story & Faibisch, 1998). Aggression at school was associated with anxiety and depression symptoms. As concerns obese and overweight children aged between 11 and 16, Janssen *et al.* argued that they were more likely to be victims of aggression than their normal weight classmates and that the risk of victimization increases with the child's weight gain (Janssen, Craig, Boyce and Pickett, 2004). According to other researches, obesity would involve aggression support. Another study showed that obesity-related aggression was common, and that children subject to teasing were more susceptible to emotional problems such as low self-esteem and suicidal thoughts (Eisenberg, Neumark-Sztainer, & Story, 2003). When sex is considered, there has been noted that obese girls were generally more likely to be teased than obese boys.

Whereas obesity does not necessarily have negative psycho-social effects, there are however children and adolescents who complain of psycho-social suffering on account of their overweight, and victimization and teasing are significant psychological trauma risk factors and also stress factors triggering excessive emotional eating. Stressed children are more prone to overeating or *emotional eating*, which is excessive eating as coping mechanism. *Weight-related prejudice*, defined as the tendency to unfairly judge an individual based on their overweight, is an important social problem. Overweight/obese children are more likely to be abused or humiliated and they are also more likely to get engaged in aggressive behaviors. Unless abused children are identified and supported, it is difficult to help them lose weight by changing their lifestyle. Some harassed children are incapable of complying with therapeutic nutritional programs because of their emotional eating behavior. Obese people discrimination is also a significant harmful ever-present social problem, which needs early and concrete tackling and which should be part of the children's and adolescents' therapy.

Impact on self-esteem

Self-esteem plays an important role in the children's and adolescent's growth and development process. Harter's model of self-esteem includes five distinct dimensions: perceived self-efficacy, self-concept, scholastic competence, athletic competence, peer social acceptance, physical appearance. Bruch (1981) theorizes the role that the inclusion of body weight-related behaviors in self-concept plays in the occurrence of eating disorders by the psychosomatic dynamics of obesity. The connection between the development and definition of the self and one's eating behavior has also been theoretically supported by clinical studies. According to the psychosocial approach, individuals are motivated to develop ideal identities, their aspirational self; the so-called Chart of the Self conceptualizes cognitive structures defined on areas depending on one's experiences and focusing on a particular aspect that the individual finds important (Kendzeirski, 2007). Being directly linked to self-esteem, yet having its own scope, the concept of body image is particularly relevant in obesity. Body image is a complex construct including perceptions, cognitions, emotions and attitudes related to one's own body (Cash, 1990). This conceptualization includes the subjective image of one's body sizes and attractiveness; in most studies the emphasis is laid on body weight and shape satisfaction. The ideal body image that children and adolescents have is not a creative image, but a construct, the result of family, social and cultural factors in connection with the representation of the self in bodily terms. It is a well-known fact that obese children are more susceptible to psychological suffering.

French, Story and Perry (1995) reviewed 35 studies and analyzed the relation between self-esteem and obesity in children and concluded that 13 of 25 studies reported lower self-esteem in obese young people. He also noted that six of eight studies revealed an improved self-esteem level in overweight children who began to lose weight thanks to dieting. Self-esteem in overweight children and adolescents varies with gender, the females showing a greater risk of developing low self-esteem than males (Nowicka *et al.*, 2009; Latzer & Stein, 2013). The level of self-esteem depends on the patient's age. Thus, in a very tender age, obese children do not have any negative feelings about their weight. When they start going to school, however, things change dramatically. A study conducted on 9 to 11 year-old children and their parents revealed that self-esteem was lower in overweight girls. They had low self-esteem as they were convinced that their parents considered their overweight a negative thing and they were unhappy with their child's weight (Pierce & Wardle, 1997). Weight-based teasing from peers and parents in childhood was associated with poorer self-esteem among obese adolescents, in the absence of psychological counselling and family support (Davison & Birch,

2002). Thus, in addition to their constant fight against their overweight, adolescents struggle with low self-esteem, with low self-worth, with increasing frustrations, with low motivation to change and with their persistent unhealthy behaviors (Wardle and Cooke, 2005). As far as therapy is concerned, clinicians should employ a positive language and motivational interviewing methods when dealing with overweight young people, they should instil hope and courage, they should avoid negative communication, either verbal or non-verbal, and they should try to prevent the continuous depreciation of the patient's self-worth.

Feeling of guilt

In addition to feeling uncomfortable with themselves, obese children also feel guilty for their obesity. A study conducted on obese children aged between 9 and 11 proved that they felt ashamed of their weight and that they had fewer friends and were left out from various social activities on account of their weight. Moreover, 90% of the overweight children were convinced that their classmates would stop harassing them if they lost weight, whereas 69% of them reckoned that they would have more friends if they had a normal weight. This study suggests that overweight children blame themselves for the negative social messages they receive and they think they are guilty for not managing to keep their body weight under control.

Quality of life

According to the WHO's definition, quality of life refers to "an individual's perception of their existence given the cultural environment and system of values in which one lives". Although the BMI is an important medical indicator of one's health state, it fails to assess the physical, social and scholastic areas of an obese child's life. The research conducted revealed that the quality of life of obese children is lower due to their poorer physical and mental health, or to their deficient social functioning and poorer school performance. In their study, Schwimmer *et al.* noted in children and adolescents with obesity BMI correlates inversely with physical activity, so cause weight gain decreased physical activity, causing a vicious circle with increasing BMI. In the same study the authors observed the decrease of the quality of life of obese children as compared to normal weight children, just like the quality of life of children suffering from cancer is lower than that of their healthy peers (Schwimmer, Burwinkle & Varni, 2003). The comorbidities of obese children and adolescents, dyslipidemia and hyperinsulinemia, the silent precursors of cardiovascular disease and diabetes, as well bone disorders and sleep apnea are often associated with poorer quality of life. The more obese the children, the lower the score of their quality of life (Pinhas-Hamiel *et al.*, 2006).

Mental health

Childhood obesity is not considered a mental disorder in itself. Nevertheless, obese boys were found to experience relationship, focus, behavioral and hyperactivity problems as early as the age of 3-5, unlike their peers of the same age with a state of nutrition appropriate for their age. As concerns the causality relation between obesity and depression, it is not well known whether depression is the cause or the consequence of obesity, as both assumptions may hold. According to literature data, obese adolescents have a high risk of developing neuropsychiatric disorders as adults (Mustillo *et al.*, 2003). Nutritional therapy failure and their inability to keep their weight under control, in addition to their emotional stress, determine them to eat more, which lead to anxiety and depressive disorders in time. Initially, some prospective studies of adolescent girls found that obesity did not predict depression at follow-up periods (Stice & Bearman, 2001; Stice *et al.*, 2000), but Sjöberg, Nilsson and Leppert (2005) have shown that school age girls are especially prone to depressive behaviors. So, the higher the BMI was associated with the higher risk of developing depression and other mental disorders when they become adolescents and adults. As far as the patients' sex is concerned, there has been noted that. Whereas research among boys has demonstrated a modest relationship between chronic obesity since childhood and higher levels of depression over time. On the other hand, the childhood depression predicted development of obesity at 1-year follow-up (Goodman & Whitaker, 2002) and another longitudinal study reported that adolescent depression predicted obesity in adulthood (Richardson *et al.*, 2003). In children with depressive disorders, insulin resistance increase leads to appetite increase and hence to weight gain. On the other hand, depression is accompanied by insomnia, tiredness and unwillingness to exercises, which create a vicious circle the effect of which is the increase in body weight. Generalized anxiety and depression may also stimulate neuroendocrine responses. The activation of the hypothalamic-pituitary axis and of the sympathetic nervous system induces intra-abdominal adiposity, insulin resistance and metabolic syndrome by producing an excessive amount of cortisol. So, children who suffer from psychological disorders (e.g. depression, anxiety, and eating disorders) may have more difficulty controlling their consumption of food, exercising an adequate amount and maintaining a healthy weight. According to the results of various population studies, overweight and obese adolescents are more likely to have suicidal ideation as compared to their normal weight peers (Ackard *et al.*, 2003; Eaton *et al.*, 2005). Stigmatization and weight-based teasing are the risk factors the most closely related to the idea of suicide (Eisenberg *et al.*, 2003; Neumark-Sztainer *et al.*, 2002).

Social relations

Loneliness is common among obese children as compared to their normal weight peers (Zeller, Reiter-Purtill & Ramey, 2008). The same study concludes that antisocial children will become adolescents and adults with a high risk of low self-esteem and depression. Various studies conducted to assess obese children and adolescent popularity has provided mixed results. Thus, Phillips' and Hill's study (1998) reported overweight and obese pre-adolescent children had as many friends as their normal weight peers of similar age, whereas the study carried out by Zeller and Ramey (2008) claimed that these children were less easily accepted by various groups of children and had fewer friends. Many studies invested overweight and obese children with a predisposition to pro-social behaviors, i.e. to being helpful and kind to others (Warschburger, 2005; Zeller *et al.*, 2008), probably in an effort to win more friends despite their lack of popularity. As far as romantic relationships are involved, two studies (Sobal, Nicolopoulos & Lee, 1995) revealed that obese adolescent girls were less involved in romantic relationships and, on the other hand, that normal weight adolescents felt uncomfortable when dating an overweight individual.

Academic performance

The results of the studies described in literature on the connection between obesity and academic performance are conflicting. Warschburger (2005) concluded that overweight children had academic achievement difficulties especially during their adolescence, and that poor school performance may be an obesity development predictor. On the other hand, many studies established no link between BMI and academic performance (Franklin *et al.*, 2006; Zeller *et al.*, 2008). Although no conclusion may be drawn as concerns their academic performance, statistical data show that absenteeism is higher in obese students due to the conditions associated with it (Geier *et al.*, 2007; Zeller *et al.*, 2008). As early as 1984, Wadden and Brownell argued that "*society does not tolerate obesity, especially during childhood*". Overweight children and adolescents may develop harmful psychosocial sequelae, including depression, teasing, social isolation and discrimination, lower self-respect, behavioral problems, body image dissatisfaction and lower quality of life (Wadden *et al.*, 1984). Psychological trauma is not necessarily a consequence of obesity, yet overweight or obese adolescents are more often victims of stigmatization, which later makes them more likely to develop mental disorders.

Conclusions

Obesity is a chronic extremely costly condition by the complex interventions it requires. Therefore, healthy nutrition and obesity control in children should play an important role in public health. Psychosocial issues and the quality of life are important components for the patients diagnosed with obesity. The school and social performance of children and adolescents with obesity are often less favourable compared to normal weight peers because of greater school absenteeism, psychosocial stress, lack of physical activity and more behavioral problems. Discrimination against obese people is an important social aspect that needs to be addressed early and psychotherapy should be included in the treatment of children and adolescents with obesity. Childhood obesity prevention is a public health priority in the European Union, in Romania being included in the National Prevention Program implemented by the Ministry of Health.

References

- Ackard, D.M., Neumark-Sztainer, D., Story, M., Perry, C. (2003). Overeating among adolescents: Prevalence and associations with weight-related characteristics and psychological health. *Pediatrics*, 111, 67-74.
- Bruch, H. (1981). Developmental considerations of anorexia nervosa and obesity. *The Canadian Journal of Psychiatry*, 26(4), 212-217.
- Cash, T.F., (1990). The psychology of physical appearance: aesthetics, attributes and images. In: Cash, T.F. and Pruzinsky, T., eds. *Body Images: Development, Deviance and Change*. New York: Guilford Press, 51-79.
- Davison, K.K., & Birch, L.L. (2002). Processes linking weight status and self-concept among girls from ages 5 to 7 years. *Developmental Psychology*, 38, 735-748.
- de Onis, Blossner, M., & Borghi, E. (2010). Global prevalence and trends of overweight and obesity among preschool children, *American Journal of Clinical Nutrition*, 92, 1257-1264.
- Eaton, D.K., Lowry, R., Brener, N.D., Galuska, D.A., & Crosby A.E. (2005). Associations of mass index and perceived weight with suicidal ideation and suicide attempts among US high school students. *Archive of Pediatric Adolescent Medicine*, 159, 513-519.
- Eisenberg, M.E., Neumark-Sztainer, D., & Story, M. (2003). Associations of weight based teasing and emotional well-being among adolescents. *Archives of Pediatrics and Adolescent Medicine*, 157, 733-738.
- Franklin, J., Denyer, G., Steinbeck, K.S., Caterson, I.D., & Hill, A.J. (2006). Obesity and risk of low self-esteem: a statewide survey of Australian children. *Pediatrics*, 118, 2481-2487.

- French, S.A., Story, M., & Perry, C.L. (1995). Self-esteem and obesity in children and adolescents: A literature review. *Obesity Research*, 3, 479-490.
- Geier, A.B., Foster, G.D., Womble, J., McLaughlin, L.G., Borradaile, K.E., Nachmani, J., Sherman, S., Kumanyika, S., & Shults, J. (2007). The relationship between relative weight and school attendance among elementary schoolchildren. *Obesity*, 15(8), 2157-2161.
- Haines, J., Neumark-Sztainer, D., Hannan, P., & Robinson-O'Brien, R. (2008). Child versus Parent Report of Parental Influences on Children's Weight-related Attitudes and Behaviors, *Journal of Pediatric Psychology*, 33(7), 783-788.
- Janssen, I., Craig, W.M., Boyce, W.F., & Pickett, W. (2004). Associations between overweight and obesity with bullying behaviors in school-aged children. *Pediatrics*, 113, 1187-1194.
- Kendzierski, D. (2007). A Self-Schema Approach to Healthy Eating, *Journal of the American Psychiatric Nurses Association*, 12(6), 350-357.
- Kitayama, S., Markus, H.R., Matsumoto, H., & Norasakkunkit, V. (1997). Individual and collective processes in the construction of the self: self-enhancement in the United States and self-criticism in Japan. *Journal of Personality and Social Psychology*, 72(6), 1245-1267.
- Latzer, Y., & Stein D. (2013). A review of the psychological and familial perspectives of childhood obesity. *Journal of Eating Disorders*, 1(7), 1-13.
- Lobstein, T., Baur, L., & Uauy, R. (2004). Obesity in children and young people: A crisis in public health. *Obesity Reviews*, S1, 4-85.
- Neumark-Sztainer, D., Croll, J., Story, M., Hannan, P. J., French, S. A., & Perry, C. (2002). Ethnic/racial differences in weight-related concerns and behaviors among adolescent girls and boys: Findings from Project EAT. *Journal of Psychosomatic Research*, 53, 963-974.
- Neumark-Sztainer, D., Story, M., & Faibisch, L. (1998). Perceived stigmatization among overweight African-American and Caucasian adolescent girls. *Journal of Adolescent Health*, 23(5), 264-270.
- Nowicka, P., Hoglund, P., Birgerstam, P., Lissau, I., Pietrobelli, A., & Flodmark, C.E. (2009). Self-esteem in a clinical sample of morbidly obese children and adolescents. *Acta Paediatrica*, 1(1), 153-158.
- Olteanu, O.M. (2010). *Aspecte psihologice și psihopatologice ale obezității și supraponderalității la copiii, preadolescenți* – Teză de doctorat, București.
- Phillips, R.G. & Hill, A.J. (1998). Fat, plain, but not friendless: self-esteem and peer acceptance of obese pre-adolescent girls. *International Journal of Obesity*, 22, 287-293.
- Pierce, J.W., & Wardle, J. (1997). Cause and effect beliefs and self-esteem of overweight children. *Journal of Child Psychology & Psychiatry*, 38, 645-650.
- Pinhas-Hamiel, O., Singer, S., Pilpel, N., Fradkin, A., Modan, D., & Reichman, B. (2006). Health-related quality of life among children and adolescents: associations with obesity. *International Journal of Obesity*, 30, 267-272.
- Puhl, R.M., & Latner, J.D. (2005). Stigma, obesity, and the health of the nation's children. *Psychology Bulling*, 133(4), 557-580.
- Schwimmer, J.B., Burwinkle, T.M., & Varni, J.W. (2003). Health-related quality of life of severely obese children and adolescents. *JAMA*, 289, 1813-1819.

- Sjöberg, R.L., Nilsson, K.W., & Leppert, J. (2005). Obesity, Shame, and Depression in School-Aged Children: A Population-Based Study. *Pediatrics*, 116, 389-392.
- Sobal, J., Nicolopoulos, V., & Lee, J. (1995). Attitudes about overweight and dating among secondary school students. *International Journal of Obesity*, 19(6), 376-381.
- Swartz, M.B., & Puhl R. (2003). Childhood obesity: a societal problem to solve. *Obesity Reviews*, 4(1), 57-71.
- Wadden, T.A., Foster, G.D., Brownell, K.D., & Finley, E. (1984). Self-concept in obese and normal-weight children. *Journal of Consulting and Clinical Psychology*, 52, 1104-1105.
- Wardle, J., & Cooke, L. (2005). The impact of obesity on psychological well-being. *Best Practice of Res Clinical Endocrinology Metabolism*, 19(3), 421-440.
- Warschburger P. (2005). The unhappy obese child. *International Journal of Obesity*, 29, S127–S129.
- Zametkin, A.J., Zoon, C.K., Klein, H.W., & Munson, S.B. (2004). Psychiatric Aspects of Child and Adolescent Obesity: A Review of the Past 10 Years. *Journal of the American Academy of Child & Adolescent Psychiatry*, 43(2), 134-150.
- Zeller, M.H., Reiter-Purtill, J., & Ramey C. (2008). Negative peer perceptions of obese children in the classroom environment. *Obesity* (Silver Spring), 16(4), 755-762.