



Depression inherent to child obesity: Integrative literature review

A depressão inerente à obesidade infantil: Revisão integrativa de literatura

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ABSTRACT

Context. Depression is a very frequent psychiatric disorder in children with childhood obesity (OI) of school age and adolescence, since this pathology is a chronic disease that has increased in recent years, including in the pediatric population, and has become a public health problem. Goal. To assess the likelihood of developing depression due to childhood obesity. Also, check the most frequent causes. Methods. It refers to an integrative review, whose research was carried out through the platforms *Scientific Electronic Library Online* (SciELO), *Medical Literature Analysis and Retrieval System on line* (MEDLINE) and *Elsevier via ScienceDirect* in search of scientific articles to analyze data and prepare the study, with the target audience being in the age group of 5 to 17 years. The surveys took place in the months of September to November 2020. Findings. Thus, there is a high incidence of the development of depression in obese children and adolescents, with a higher prevalence in females. Conclusion. Therefore, it is of paramount importance to discuss the psychological consequences that obesity in pediatrics entails because this disease brings comorbidities and affects mental health, developing for example: depression.

Keywords: Pediatric obesity, Depression, Public health.



1 INTRODUCTION

In line with the World Health Organization (WHO), obesity, both in adults and children, is a chronic disease determined by the high accumulation of body fat (MINISTRY OF HEALTH, 2017). Childhood obesity (OI) affects about 15% of children and 8% of Brazilian adolescents (FIOCRUZ, 2018).

According to the WHO *and Imperial College London*, this disease has been growing, worldwide, approximately tenfold in the last four decades, and may surpass cases of moderate and severe malnutrition by 2022 (PAN AMERICAN HEALTH ORGANIZATION – BRAZIL, 2017).

It is known that OI has a multifactorial etiology, such as: genetic, psychological, and related to life habits. Therefore, it may develop cardiovascular comorbidities, neuroendocrine comorbidities, orthopedic changes, lung diseases, malignant neoplasms, and psychiatric disorders. The diagnosis is clinical, performed through anamnesis, physical examination, anthropometry, and calculation of the Body Mass Index (BMI), using the WHO BMI curves for age and sex (SOCIEDADE DE PEDIATRIA DE SÃO PAULO, 2019).

Given this, it can be classified as obesity, in children aged 5 to 19 years, with BMI above the Z + 2 score and severe obesity with BMI above the Z + 3 score (SOCIEDADE DE PEDIATRIA DE SÃO PAULO, 2019).

The treatment of obesity is based on changes in lifestyle (dietary re-education and practice of physical activities), medication and psychological monitoring. It is of paramount importance to stimulate prevention from prenatal care, promotion of breastfeeding and healthy habits, through proper nutrition, physical exercise, and regular sleep routine (SOCIEDADE DE PEDIATRIA DE SÃO PAULO, 2019).

Thus, as mentioned above, OI affects physical health, as well as promotes psychosocial implications to the life of the child, who experiences *bullying*, has negative body image, anxiety disorders and depression; thus, demonstrating the correlation of psychological impacts and obesity in childhood (ROCHA et al, 2017).

It is believed that depression is one of the main psychic consequences of childhood obesity. According to the DSM-V, depressive disorders present as characteristics: sad, empty, or irritable mood, associated with somatic and cognitive changes that impair the functionality of the being (AMERICAN PSYCHIATRIC ASSOCIATION, 2014). In childhood, irritability is predominant along with easy crying, in addition to the decline in school performance. Therefore, the stigmatization, social exclusion and prejudice experienced in childhood obesity interfere in the family, social and school relationship of children and adolescents, contributing to the development



of depressive symptoms (VAZ A et al., 2010).

Thus, it is evident the importance of investigating the emergence of depression due to the advent of obesity in childhood and adolescence in Brazil, based on an integrative literature review, since this type of study can help provide relevant information for the development of public health actions that aim to help reduce possible economic and social damage to obese individuals.

Given the above, the question is: Are obese children and adolescents more likely to develop depression?

2 METHODS

It refers to an integrative literature review, through scientific articles in the languages Portuguese, English and Spanish to research the advent of depression as a psychological consequence of childhood obesity. Thus, the platforms *Medical Literature Analysis and Retrieval System online* (MEDLINE) via *PubMed*, *Scientific Electronic Library Online* (SciELO) and *Elsevier* via *ScienceDirect* were used for analysis. The DeCS descriptors used were: pediatric obesity and depression. The MeSH descriptors were *pediatric obesity* and *depression*.

The research was carried out in 3 phases: title, abstract and full articles. Then, the selected articles were evaluated according to the *Oxford Centre for Evidence-Based Medicine Classification*. In addition, the level of evidence was verified through the *Classification of Levels of Evidence of the Oxford Centre for Evidence - Based Medicine*.

Inclusion criteria: Free scientific articles available online, theses and literature review articles; published from 2008 to June 2020, in the languages Portuguese, English and Spanish. The quality of life and psychological aspects, such as depression, of obese children and adolescents aged five to seventeen years were measured.

Exclusion criteria: Case studies and cohort studies. Studies with patients aged less than 5 years and older than 18 years.

This project does not require a Free and Informed Consent Form (ICF), as it will not directly or indirectly address patients and they will not be identified.

3 RESULTS

A total of 147 articles were found. Promptly the title phase, 80 articles were elected. In the abstract phase, 50 articles were separated. Subsequently, 25 articles were chosen after reading the articles and chosen to finalize the analysis of this work.

OI increases the probability of developing depression in 19 articles, that is, in 76% of the

studies, due to *bullying*, low self-esteem and poor quality of life of these children and adolescents. In addition, in 6 articles (24%) demonstrates a bidirectional link between the two diseases, so that depression can contribute to the emergence of obesity and vice versa, affecting the therapy of both. It is worth noting that 12 articles (48%) indicate a higher prevalence in females. And in 1 article (4%) it demonstrates that depression is more significant in males. In only 1 article (4%) demonstrates that OI is a risk factor for suicidal behavior.

There are 16 articles with evidence level 1 (64%), 5 articles with evidence level 2 (20%) and 4 articles with evidence level 4 (16%). Table 1 shows.

Table 1 – Summary of the results found in the articles

Title	Authors	Level of evidence	Newspaper
Association between obesity and childhood depression in the school population of a unit of Family Medicine in Morelia, Michoacan	Janett González-Toche et al	IV	Family Care. Volume 24, Issue 1, January-March 2017, pages 8-12.
Childhood overweight and obesity and the risk of depression across the lifespan	Deborah Gibson-Smith et al	II	BMC Pediatrics. January 21, 2020; 20 (1): 25. doi: 10.1186 / s12887-020-1930-8.
Anxiety and depression in children and adolescents with obesity: a Nationwide study in Sweden	Louise Lindberg et al	I	BMC Med. 21 de February 2020; 18 (1): 30. doi: 10.1186 / S12916-020-1498-Z.
Psychological consequences of childhood obesity: psychiatric comorbidity and prevention	Jean Rankin et al	I	Adolesc Health Med Ther. 14 de November 2016; 7: 125-146. Doi: 10.2147 / MIMICS. S101631. eCollection 2016.
Psychological alterations associated with childhood obesity	Edali Gloria Ortega Miranda	I	Rev Med Hered. 2018; 29:111-115. DOI: https://doi.org/10.20453/rmh.v29i2.3352

3.1 PROVENANCE CONSIDERATIONS / THEMES

It demonstrates the association between obesity in the child population and the development of depression, being more prevalent in girls compared to males. In addition, maternal obesity as a risk factor for childhood obesity.

It addresses the relationship of obesity in childhood and adolescence with the increased development of depression in adulthood. It reports a higher prevalence in females.

It reports that there is a higher prevalence of depression in obese children compared to normal-weight children, a higher probability in females and in a history of neuropsychiatric disorder in a first-degree relative. It addresses the psychiatric consequences of childhood obesity, such as depression, which has become more frequent in girls than boys. It also mentions family influence as a risk factor for childhood obesity and the development of psychiatric disorders. In addition, the low self-esteem of obese children is more prevalent with increasing age.

It portrays the increase in obesity in preschool children, as well as associates with the prevalence of obesity in adulthood, consequently, increased comorbidities and psychiatric disorders, such as depression, due to prejudice, *bullying* and low self-esteem they experience.

(Continued from Table 1)

Title	Authors	Level of evidence	Periodic
Psychosocial aspects of obesity in childhood and adolescence	Marília Rocha et al	I	Psycho., Health & Diseases vol.18 no.3 Lisbon ten. 2017. DOI: http://dx.doi.org/10.15309/17psd1807
Association between depression and overweight in Chinese adolescents: a cross-sectional study	Zhongyi Zhao et al	I	BMJ Open 2019;9:e024177. doi:10.1136/bmjopen-2018-024177
Depression and Obesity: Analysis of Common Biomarkers	Walter Milano et al	I	Exp ther with. January 2016; 11 (1): 15-20. Doi: 10.3892 / etm.2015.2853. Epub 2015, 11 de November.
Factors Associated with Depression and Anxiety Symptoms among Children Seeking Treatment for Obesity: A Social-Ecological Approach	Daniel H. Sheinbein et al	IV	Pediatr Obes. August 2019; 14 (8): E12518. DOI: 10.1111 / IJPO.12518. Epub 2019, April 16.
Psychosocial factors and obesity in 17 high-, middle and low-income countries: the Prospective Urban Rural Epidemiologic study	A Rosengren et al	II	Int J Obes (Lond). August 2015; 39 (8): 1217-23. Doi: 10.1038 / IJO.2015.48.
Correlation of Obesity and	Bayanah	II	Iran J Pediatr. March

Overweight with Emotional-Behavioral Problems in Primary School Age Girls in T., Iran	Seyedamini et al		2012; 22 (1): 15- 22.
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This study indicates a relationship between obesity and reactions to depression and psychosocial difficulties related to *bullying*, low self-esteem and poor quality of life in children and adolescents.

It makes the association of depression with obesity in adolescents, being more significant in males when referring to depressed affect, somatic symptoms and interpersonal difficulties, and in females the lack of positive affect was more significant.

It defines the concept of obesity, stating that it is a global epidemic and public health problem. In addition, it exposes the causes, symptoms and complications, preventive measures and treatment of childhood obesity.

It identifies as factors associated with depression in obese preadolescents: low socioeconomic level, psychological control of parents and emotional eating.

It correlates psychosocial stress with increased obesity and depression.

It reports that obese school-age female children have more risks of developing emotional and behavioral problems compared to normal-weight girls.

(Continued from Table 1)

Title	Authors	Level of evidence	Periodic
Is obesity associated with depression in children? Systematic review and meta-analysis	Shailen Sutaria et al	I	Arch Dis Child. January 2019; 104 (1): 64-74. Doi: 10.1136 / archdischild-2017-314608.
Mental Health, Wellness, and Childhood Overweight/Obesity	Shelly Russell Mayhew et al	I	J Obes. 2012; 2012: 281801. doi: 10.1155 / 2012/281801. Epub 2012, June 24.
Anxiety and depression levels in prepubertal obese children: a case-control study	Maria Esposito et al	IV	Neuropsychiatr Dis Treat. 2014; 10: 1897–1902. Published online Oct 3, 2014. doi: 10.2147 / RMB. S69795
Childhood Obesity and Depression: Connection between these Growing	Gloria M Reeves et al	I	Int J Child Health Hum Dev. August 2008; 1 (2): 103-114.



Problems in Growing Children			
Comanagement of Pediatric Depression and Obesity: A Clear Need for Evidence	Nicole L. Mihalopoulos et al	I	Clin Ther. 1 of September 2015; 37 (9): 1933–1937. Published online Aug 29, 2015. doi: 10.1016/j.clinthera.2015.08.009
Teasing, depression and unhealthy weight control behaviour in obese children	J Madowitz et al	II	Pediatr Obes. December 2012; 7 (6): 446-52. Doi: 10.1111 / J.2047-6310.2012.00078.x. Epub 2012, September 19.

It shows a higher prevalence of depression development in obese and female children and adolescents.

It reports that childhood obesity is a risk factor for the onset of depression and even suicidal behavior. In addition, it also cites a higher frequency in girls. It states that despite the difficulty of identifying psychiatric symptoms in children, there is a correlation between childhood obesity and increased depressive symptoms, which affect growth, development, school performance and family relationships.

It analyzes the diagnostic criteria of obesity and depression in childhood and the association between the two pathologies.

It points out that the interrelationship between obesity and depression is not well understood, but that the presence of one of the diseases contributes to the manifestation of the other and probably interferes with the treatment of the other disease. It also shows a higher incidence in girls.

It associates the *bullying* experienced by obese children and adolescents with a greater predisposition to develop depression.

(Continued from Table 1)

Title	Authors	Level of evidence	Periodic
Obesity, Overweightness, and Depressive Symptomology among American Indian Youth	David Eitle et al	II	J Racial Ethn Health Disparities. December 2018; 5 (6): 1305-1314. doi:10.1007/s40615-018-0479-9.
Prospective Associations between Depression and Obesity for Adolescent Males and Females- A Systematic Review and Meta-Analysis of Longitudinal Studies	Munim Mannan et al	I	PLoS One. 10 de June 2016; 11 (6): e0157240. doi: 10.1371 / journal.pone.0157240 .
Understanding the Early Signs of Chronic Disease by Investigating the Overlap of Mental Health Needs and Adolescent Obesity	Tyler C Smith et al	IV	AIMS Public Health. August 18, 2015; 2 (3): 487-500. doi: 10.3934/ publichealth.2015.3.487.
Scientific profiles in the field of children obesity	Mohammad Hossein Biglu et al	I	Rev. cuba. inf. cienc. salud [online]. 2016, vol.27, n.4, pp.447-455. ISSN 2307-2113.
The Prevalence of Depression and Anxiety Symptoms among Overweight/Obese and Non-Overweight/ Non Obese Children/Adolescents in China: A Systematic Review and Meta-Analysis	Simeng Wang et al	I	Int J Environ Res Public health. January 26, 2019; 16 (3): 340.

It exposes the association of obesity with depression being related to factors such as gender, more frequently in females, and socioeconomic status.

It cites an association between childhood obesity and depression, with a higher incidence in girls.

It demonstrates that childhood obesity acts as a strong risk factor for obesity in adulthood, and the onset of chronic diseases. In addition, a direct relationship between depression and obesity, but with depression as a factor of obesity.

It defines that childhood obesity is a multifactorial problem and is associated with many factors such as: family, inadequate eating habits, sedentary lifestyle, psychological and socioeconomic factors.

It exposes that obese adolescents are more prone to mental health problems such as depression and low self-esteem than non-obese adolescents.

(Continued from Table 1)

Title	Authors	Level of evidence	Periodic
Determinants behavioral in children and adolescents diagnosed with obesity	Vaz A et al	I	Feeding Human. Volume 16. No. 2. 31-35. 2010
Depression, Anxiety, and Severity of Obesity in Adolescents: Is Emotional Eating the Link?	Claudia K Fox et al	I	Clin Pediatr (Phila). Oct 2016; 55 (12): 1120-5. doi: 10.1177 / 0009922815615825. Epub 2015, November 18.

It states that the prevalence of childhood obesity has led to behavioral changes, especially behavioral problems such as depression.

It associates depression with severe obesity in adolescents, and this relationship is probably bidirectional. He also mentions that emotional eating was not a mediator between depression and obesity.

4 DISCUSSION

The present study aimed to assess the probability of the development of depression due to childhood obesity, through numerous articles idealized by several authors, who discussed the subject with a great diversity of opinions. Given that some writers share the opinion, that despite the difficulty of identifying psychiatric symptoms in children, there is a correlation between childhood obesity and increased depressive symptoms, which affect growth, development, school performance and family relationships (ESPOSITO M. et al., 2014). Agreeing with this article, another, reports that childhood obesity brings several psychosocial implications to the life of the individual and may compromise their psychological and social health (ROCHA, M. et al, 2017), in addition to being related to the prevalence of obesity in adulthood, also raising other comorbidities (GLORIA, E., 2018).

Numerous articles have brought with them the information that the development of depression due to obesity is more prevalent in females compared to males (GONZALEZ J. et al., 2017), although another author makes this association more specifically considering it more



significant in males when referring to depressed affect, somatic symptoms and interpersonal difficulties and in females the lack of positive affect is more significant (ZHAO Z. et al, 2018).

Among the articles researched in overweight young people, these suffer several provocations which are associated with a series of negative psychosocial consequences harmful to health, discouraging children from practicing healthy behaviors (MADOWITZ J. et al, 2012). In addition to provocations, some writers list other causal factors associated with depression in obese preadolescents, such as: low socioeconomic status, psychological control of parents and emotional eating (SHEINBEIN D. et al, 2019).

Although some publications answer and support the question of the present study, numerous other authors list a bidirectional link between obesity and depression, associating the latter with an increased risk of weight gain and obesity, which in turn are associated with a greater vulnerability to depressive disorders, linking the two pathologies to dysregulation of the stress system and central and systemic organic inflammation (MILANO W. et al, 2020).

Throughout the study process, the production of research inherent to the theme is still scarce, making evident the absence of concrete opinions on the theme discussed in the present work. Therefore, it is increasingly necessary to study the Brazilian reality to implement preventive policies for childhood obesity to minimize and even reduce the possibility of developing depression in adolescents and adults, which affirmatively will lead to an improvement in people's quality of life, reduce possible hospital admissions and consequently save on expenses in the public health sector.

5 CONCLUSION

Therefore, according to the researchers measured, obesity in childhood and adolescence increases the probability of developing depression, which affects the social life, school performance and the relationship with the family of the child and adolescent, bringing great psychosocial impacts in the lives of these individuals.

Therefore, because it is a public health problem, it is of fundamental importance to adopt preventive measures with the encouragement of food reeducation and the practice of physical exercises, as well as a multidisciplinary follow-up with the family and community doctor, pediatrician, nutritionist, psychiatrist, and psychotherapy. Finally, due to the relevance of the theme, further studies are essential to investigate this correlation and reduce the rise of this disease.



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