



Psychological Consequences of Physical Inactivity in Children and Young People Causing Obesity - Review study

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Abstract

The main goal of this research was a critical presentation of modern research results on the topic of psychological consequences of physical inactivity of children and young people, which causes obesity, in order to assess the current state of affairs in the literature in this field. Papers were found using keywords from the topic title by searching the scientific database "PubMed". Out of a total of 37 works found, in accordance with the Prisma principles, a total of 8 works were included in the review. The obtained results indicate that physical inactivity that causes obesity also results in negative psychological phenomena, such as stress, depression and anxiety. This research will contribute to easier gathering of information, drawing conclusions, analysis of questions that do not yet have answers, as well as information that is missing in the literature, and is important for the given topic. Certainly, considering the importance of the topic, it is necessary to carry out similar studies in more scientific bases in order to obtain even more precise results.

Keywords: *physical inactivity, obesity, psychological consequences, review study*

Introduction

Physical activity is one of the most important aspects of healthy lifestyles at every age. Despite the significance of physical activity for all aspects of life, recent data from the World Health Organization (WHO) is extremely concerning. According to research, 28% of the global adult population and as many as 81% of adolescents are insufficiently active. Estimates indicate that women are less active than men—one in three women and one in four men are physically inactive. Furthermore, physical inactivity is more pronounced in high-income countries compared to those with middle- and low-income levels. In Europe, 31% of the population aged 15 and older is insufficiently active (WHO, 2022). These figures suggest that physical inactivity has become a public health issue worldwide. Numerous health problems are associated with insufficient physical activity, which is believed to contribute to the onset of heart disease, hypertension, malignancies, diabetes, obesity, and depression (WHO, 2022).

It can be noted that insufficient physical activity is one of the primary causes of obesity in children and adolescents (Barlow, 2007; Skinner et al., 2008; Dinarevic et al., 2011). Children and adolescents are known to spend increasingly more time in front of computers and televisions and less time in nature, in addition to consuming fast and unhealthy food and sugary drinks, which leads to weight gain. Excessive intake of unhealthy food and insufficient physical activity results in an imbalance in the body, leading to increased BMI, or overweight (Freedman et al., 2004; Jansen et al., 2008). As a medical issue, obesity has reached epidemic proportions globally. The number of obese children and adolescents has increased tenfold over the past 40 years, now totaling 124 million (WHO, 2016). The prevalence of obesity is particularly high in developed countries (Vukušić et al., 2015), but it is also a concern in developing nations (De Onis et al., 2010; Lobstein et al., 2015). Worldwide, the prevalence of obesity among children and ad-

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olescents is 2-3%, while the prevalence of overweight, including obesity, is 10%. In the United States, 17.1% of children and adolescents are obese, and 37.2% are overweight (Hedley et al., 2004; Ogden et al., 2006). The prevalence of being overweight and obese among children and adolescents in Europe is significant and shows an increasing trend, although it is lower than in the United States (Ogden et al., 2006; Lobstein & Frelut, 2003). In Europe, the highest percentages of overweight youth range from 20% to 35% in southern countries, while in northern European countries, the prevalence is lower, ranging from 10% to 20% (Lobstein et al., 2004).

From the above, it can be concluded that obesity is a very complex issue that can lead to a range of health problems, such as metabolic disorders, cardiovascular and endocrine diseases, respiratory conditions, and mental health changes (Strauss, 2000; Radisavljević, 2004; Jočić Stojanović, 2010; Vlajković et al., 2015; Jočić Stojanović et al., 2015). Additionally, numerous studies have shown that obesity decreases quality of life, directly correlating with the degree of obesity, and that weight loss leads to improvements in quality of life (Kolotkin et al., 2001).

The primary aim of this research was to critically review contemporary research findings regarding the psychological consequences of physical inactivity in children and adolescents that lead to obesity, in order to understand the current state of the literature in this area.

Methods

For the purposes of this paper, the electronic database of scientific papers “PubMed” was utilized, and all papers available between January 1, 2013, and January 1, 2023, were included in the analysis. The scope of this research pertained to studies that focused on the psychological consequences of physical inactivity in children and adolescents that induce obesity. The keywords used during the search in the “PubMed” database included “obesity,” “physical inactivity,” “children,” “adolescents,” “depression,” “stress,” and “anxiety.” The selection of papers featured in this review was conducted through systematic analysis following the principles of the “Preferred Reporting Items for Systematic Reviews and Meta-Analyses” (PRISMA). Out of a total of 37 papers identified, 29 were excluded based on the criteria outlined, meaning they did not align with the theme. Thus, a total of 8 papers were included in the review, which are presented in tabular form.

Results

Table 1 illustrates an overview of selected studies focused on the psychological consequences of physical inactivity in children and adolescents that lead to obesity. The authors, study aims, sample of subjects, applied statistics, and conclusions are noted.

Table 1. Overview of Studies on the Psychological Consequences of Physical Inactivity in Children and Adolescents Leading to Obesity

Authors	Aim of the Study	Sample of Subjects	Statistics	Conclusions
Ajibewa et al. (2021)	Determine the relationship between physical activity levels and stress among obese adolescents	110 adolescents (15 years) from the USA	Cross-sectional study	Lower physical activity in obese adolescents affects the occurrence of stress.
Banerjee et al. (2021)	Examine the relationship between BMI, physical activity levels, and stress among Bengali adolescents	60 adolescent girls (14-18 years) from Bengal	Pearson correlation coefficient	Low physical activity levels contribute to increased BMI and stress levels.
Chacon Cuberost et al. (2019)	Determine the relationship between academic stress, physical activity, and diet among Spanish students	515 students (18-28 years) from Spain	T-test, ANOVA, Regression analysis	Low physical activity and excess weight are significantly associated with stress.
Da Silva Costa et al. (2021)	Comparative analysis of physical activity and symptoms of stress, depression, and anxiety among Brazilian adolescents	516 adolescents from Brazil	Levene's test	Physical inactivity contributes to the onset of stress, depression, and anxiety.
Olive et al. (2016)	Determine the impact of stress and depression on children's physical activity in Australia	676 children from Australia	Cross-sectional study	Stress and depression negatively affect physical activity; increased physical activity and lower body weight contribute to decreased stress and depression.
Rodriguez Ayllon et al. (2018)	Determine the relationship between physical fitness and psychological stress in obese children from Spain	110 children (10 years) from Spain	Linear regression	Muscle strength is related to psychological stress; higher levels of physical activity in obese children can positively impact their mental health.
Romero Perez et al. (2020)	Analyze the changes produced by a physical exercise program based on anthropometric indicators and levels of depression and anxiety in Mexican children	105 children (8-11 years) from Mexico	Statistical inference	The exercise program does not affect levels of anxiety and depression but fosters positive self-thought, self-esteem, and emotional well-being, while reducing depressive thoughts.
Wang et al. (2014)	Determine the relationship between physical activity, BMI, and mental health among children in China	3096 children (11-13 years)	Chi-square test, Logistic regression	The combined effects of physical inactivity and obesity increase the risk of developing anxiety and depression.

Discussion of results

The human body is predisposed to physical activity, and in situations of prolonged inactivity, it shows signs of functional

decline. Over the last 20 years, extensive epidemiological and experimental studies have established that inactivity leads to diseases and premature death (Ostojic et al., 2009). Physical

inactivity is a major risk factor for the development of coronary disease. It also increases the risk of strokes and other major cardiovascular risk factors such as obesity, high blood pressure, low HDL cholesterol levels, and diabetes. Decreased physical activity negatively affects self-confidence, social skills, cognitive functioning, and increases stress symptoms, contributing to lower quality of life (Stojiljković et al., 2011).

Da Costa Silva et al. (2021) conducted research on a sample of 516 adolescents to determine the relationship between physical activity and symptoms of stress, anxiety, and depression. The results showed that physical inactivity significantly contributes to the onset of these symptoms. Other studies have also demonstrated that obese adolescents who are physically inactive are susceptible to stress (Ajibewa et al., 2021). Furthermore, research based on a larger sample of subjects (3096 children) indicates that the combined effects of physical inactivity and obesity significantly increase the risk of developing anxiety and depression (Wing et al., 2014). Similar results have been achieved concerning students in Spain, revealing that low levels of physical activity and excess weight contribute to increased stress in that population (Chacon Cuberost et al., 2019). Banerjee et al. (2021) investigated the impact of physical activity on BMI and stress levels among adolescents in Bengal (India). Results indicated that low levels of physical activity significantly affect BMI, causing obesity and increased stress levels.

Olive et al. (2021) conducted a longitudinal study with a sample of 676 children to explore the bidirectional effects between physical activity and depression and stress. They found that depression and stress in children negatively affect engagement in physical activity. Conversely, participation in physical activity and reduced body weight among obese children contributed to decreased stress and depression. Exercise programs and improved physical fitness contribute to reducing stress and enhancing mental health in obese children (Rodriguez Ayllon et al., 2018). However, some studies do not show a significant relationship between physical exercise and levels of anxiety and depression. Nevertheless, the results indicate that physical exercise promotes improvements in self-perception, heightened self-esteem, emotional well-being, and reduces depressive thoughts (Romero Perez et al., 2020).

Today's sedentary lifestyle, beginning in childhood, contributes to negative energy expenditure and the emergence of obesity in children, posing a threat not only to physical but also to mental health, including the onset of depression (Chellaiyan, 2018). Whether in children or adolescents, research confirms that physical activity contributes to physical and mental health, facilitating the prevention of various diseases (Hills et al., 2007). Regular physical activity has a positive impact on the functioning of cardiovascular and respiratory organs and musculoskeletal system components, making bones stronger, preventing rapid weight gain and the diseases associated with obesity, as well as psychological issues. Combining a dietary program with physical activity can significantly affect weight reduction and metabolic changes (Mitić, 2011; Janković, 2016). Given the negative findings from studies, it is evident that external factors must change to increase the level of physical activity in children and adolescents. Additionally, there is a need to create guidelines that enable children and adolescents to engage in age-appropriate physical activities. Finally, efforts should be directed toward promoting both physical and mental health, as well as an ac-

tive lifestyle, to halt the epidemic of physical inactivity and obesity, which carries serious consequences for physical and mental health (Hills, 2007).

Conclusion

The primary goal of this research was to critically review contemporary findings on the psychological consequences of physical inactivity in children and adolescents leading to obesity, in order to assess the current state of literature in this area. A search of the scientific database using keywords yielded a total of 8 papers, which are presented in tabular form. Based on the results obtained, it can be concluded that insufficient physical activity and obesity may lead to serious consequences for the physical and mental health of children and adolescents. In nearly all studies, the authors agree that insufficient physical activity that leads to obesity results in the emergence of stress, anxiety, and depression. Solutions to the problem may be sought in combined therapies involving reduced diets and increased physical activities. This research will facilitate easier access to information and draw conclusions, but its primary limitation lies in the search of a single scientific database; future research is recommended to explore other scientific databases, which will enable the acquisition of more reliable results on this topic.

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