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The Psychological and Physical Effects of Childhood Obesity into Adulthood

Ashley Urbom
University of Northern Colorado

University of Northern Colorado
Greeley, Colorado

THE PSYCHOLOGICAL AND PHYSICAL EFFECTS OF CHILDHOOD OBESITY INTO ADULTHOOD

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Ashley Urbom

College of Natural Health Sciences

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PREPARED BY: _____
Ashley Urbom

APPROVED BY CAPSTONE ADVISOR:_____
Lisa Caldwell

HONORS CHAIR: _____
Dr. Corinne Wieben

HONORS DIRECTOR: _____
Loree Crow

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Abstract

The purpose of this review is to assess how adults who were obese as children are affected psychologically and physically. Understanding childhood obesity has become an important topic in the last few decades, especially in the United States. This research seeks to examine the previous literature and its gaps in making conclusions about how the diagnosis of childhood obesity affects children not only at the time of diagnosis but into adulthood as well. Articles for review sourced from PubMed and PsychInfo and were available via the University of Northern Colorado libraries. Numerous sources were found, and several had varying results. Studies that specifically examine the psychological effects of childhood obesity are scarce, as it is a sensitive issue and involves a vulnerable population. However, since childhood obesity is becoming more prevalent in America, it is anticipated that further research will be conducted to understand the impact. After reading and analyzing previous methodology, suggestions and conclusions will be made in the discussion. Much of the previous research uses methods such as surveys to large groups of people. The scholarly contribution of this synthetic study is crucial because it will provide an analysis of the work of others while creating suggestions and ideas for future studies as well.

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1. Introduction

There are numerous factors that impact a child's weight. Risk factors such as genetics, peer influence, socioeconomic factors, social determinants of health, and screen time can all affect a child's weight. The psychological consequences that can occur for children who are obese include disordered eating behaviors, anxiety, depression, and body dysmorphia. Said consequences can also persist well into adolescence and adulthood. Physical consequences include but are not limited to pre-diabetes or diagnosis of type II diabetes, blood pressure, relationship with exercise, and weight bias and stigma from peers or classmates. However, research design, screening, and outcomes measurement varies – underscoring further opportunities for continued research and understanding to understand and support wellness.

From 2017-2020, a total of 19.7% of children aged 2-19 were diagnosed with childhood obesity in the United States (Center for Disease Control, 2022). That is over 14 million children, compared to 5% of children in the 1970s (Harvard School of Public Health). Despite significant efforts to address childhood obesity as evidenced by CDC grant funding, inclusion as a goal in Healthy People measures, rates have remained steady (CDC). Additionally, given the number of environmental, genetic, social determinants of health, and lifestyle that impact weight, determining causative factors for successful intervention has been a challenge and has been linked with increasing obesity rates among adults (CDC). This research will focus on understanding the impact of childhood obesity on later adulthood with suggestions for future research needs and opportunities within healthcare.

2. Methods and Materials

2.1 Literature Search and Selection Criteria

The study protocol was registered, approved, and overseen by the University of Northern Colorado Upper Division Honors department. A review was conducted of multiple systematic reviews (SR), meta-analyses (MA) and original research. Relevant articles were identified from electronic databases such as PubMed, Dovepress, ScienceDirect, International Journal of Pediatrics, Annals of Medicine, and Medicine journal. Search terms included “childhood obesity”, “psychological effects of childhood obesity”, “physical effects of childhood obesity”, “risk factors of childhood obesity”. Articles published after 2010 were used.

1.2 Eligibility Criteria

Studies were selected by one author (A. U.). Studies were selected if they met the following criteria: SRs, MAs, and original studies that were observational studies or controlled trials; inclusion of both young and adult patients who identified as obese, psychological effects that occurred after diagnosis/treatment, physical effects that occurred after diagnosis/treatment, as well as studies that examined risk factors for developing childhood obesity.

1.3 Data Extraction

One author (A. U.) extracted the following data for each study: first author, year of publication, origin (country), number and type of included studies, number of participants, sex, age, BMI (if included), dietary interventions/treatment, age at the time of diagnosis. Other data that was included in the extraction process included ethnicity, socioeconomic status/household income, and family history.

3. Results

3.1 Risk Factors and Potential Causation

In order to understand the potential psychological and physical effects of the disease, risk factors and potential causes must be examined first. Social determinants of health can predict whether a child will likely become obese based on accessibility to nutritious food, a safe place for exercise, affordability of sports or group activities, and family knowledge of what a balanced diet looks like (Ghosh et. Al, 2019). Some children that are obese may have had a higher genetic predisposition of becoming obese due to issues with metabolism, insulin resistance, or other factors. There are many factors that influence body weight.

The first main risk factor is socioeconomic status, which is often outside of the control of the family. There are many complexities that coincide with socioeconomic status, such as household income. With the prices of food (especially nutrient dense food) constantly rising, the number of parents and caregivers that can afford to buy healthier options is dwindling (Ghosh et. al, 2019). Families of lower socioeconomic status may also not have the time that it takes to cook a homemade meal, the prior knowledge of cooking, or have the luxury to sit down and eat a meal at the same time as a family unit. Furthermore, even with government resources that provide access to nutritious food, not everyone in need of these services is aware of them or has the time to seek them out. These same families also may live in areas where it is not safe for children to be outside playing with their friends, or physical education programs at schools may not have the same funding as others in more affluent areas. When parents or caregivers' main concern is to provide for their children and ensure that they are fed, safe, happy, and have somewhere to sleep, nutrient content of food may not be the priority, or there may be

limited access to resources to obtain nutrient dense foods. Similarly, lower socioeconomic status is associated with reduced education or knowledge of healthy eating and exercise habits. As mentioned earlier, schools in these neighborhoods may not have the funding or the resources to incorporate programs about healthy eating as effectively as other schools do, and parents and caregivers themselves may not have the background knowledge of a balanced diet (Ghosh et. al, 2019).

A second risk factor for developing childhood obesity is genetic predisposition. Endocrine disorders such as hypothyroidism, Cushing syndrome, and others are rare causes in less than 1% of cases, but they do exist and pose as barriers to a healthy weight (Gurnani et. al, 2015). Other genetic disruptions involve the leptin-melanocortin regulating pathway which is responsible for feelings of satiety, and present itself in syndromes such as Prader-Willi, Down syndrome, and Bardet-Biedl (Gurnani et. al, 2015). These also account for a small number of childhood obesity cases (around 4%). Additionally, the complex interaction of genetics with environment (epigenetics) may account for additional cases. Epigenetic modification results in altered gene expression without changes to DNA and has metabolic consequences. An obesogenic environment may contribute to epigenetic changes, though the full scope of epigenetic impact is not fully understood (Mahmoud, 2022).

On top of any sort of disorder that occurs genetically, each child also has their own metabolism and processes food differently, and various parenting styles may influence relationship with food, underscoring the complex interaction of genetics with environment and lifestyle. Children who are raised with either very restrictive or very open choices when it comes to food may struggle with their relationship to it, and for children who aren’t getting enough exercise, this may manifest itself into developing into

an unhealthy weight range. Showing and providing a balanced diet for children takes some prior knowledge of the parent or caregiver, and sometimes a difficult relationship with food for a parent can manifest into a difficult relationship with food for their children as well.

The third risk factor that was found from several studies is the impact that increased screen time, peer influence, and marketing strategies have on young children. Technology and screens are more available to young children now than ever before, and the number of parents who are using screens such as television or iPads as a form of parenting or babysitting is increasing as well. There is evidence that suggests that children should not have any screen time under the age of 2, and it should be limited as they get older. Not only does excessive screen time have negative impacts on brain development, but it also has negative implications for physical and socioemotional development (Domingues-Montanari, 2017). The more that children are entertained by screens, the less motivated they are to do things such as imaginative play, sports, outside activities, and other crucial pillars of development. In turn, research has shown that physical activity does not make up for negative impacts of excessive screen time (Domingues-Montanari, 2017). It is important to also note that this research is based on events that have taken place very recently, and it's likely that the negative impacts of excessive screen time will only increase as the "age of iPads" goes on. In a similar vein, peer influence can be a crucial part of a child's decision-making skills as they get older, especially in middle and high school age children. Eating and socialization often go together, and a main part of developing as a young teenager or even earlier is the goal of acceptance by peers and friends. This means that some children may be more inclined to eat the same things that they see their friends eating, regardless of the nutritional content

of the food. A specific study in Iran found that several themes were found amongst 52 adolescents and 10 parents: eating in the peer networks as a usual way for social interaction, peer pressure to have unhealthy dietary habits, high availability and accessibility to unhealthy foods, lack of nutritional knowledge, neglectful parenting style, and passive interaction in the friendship networks (Bagherniya et. al, 2018). Finally, despite all the healthy eating/exercise initiatives that have been implemented in public schools in the last few decades, marketing companies that target a young audience still have a heavy influence. Whether it's a commercial on TV, their favorite show discussing a certain product, or items that they may see while at the store with their family, most children will lean towards foods with higher sodium or sugar content. Major food-producing companies have a certain quota to meet, and stakeholders that rely heavily on the number of sales each year, leveraging grocery store shelf-placement (child eye-level) and endcap displays to entice purchasing. In turn, the ethical implications of influencing children to choose more unhealthy options is often overlooked (Srivastava et. al, 2021).

3.2 Psychological consequences

Several psychological consequences were found amongst obese children, the first being possible issues with body image and self-esteem. Many studies have shown that children who are overweight or obese are much more likely to report high levels of dissatisfaction with body image (Harriger & Thompson, 2012), and that adiposity does predict a future low self-esteem. Along with that, children who are overweight or obese may experience bullying from peers, criticism from parents, and feel as though their weight is out of their control (Harriger & Thompson, 2012), offering concern that it may not be the weight itself that indicates a low self-esteem but rather social consequences.

When children are exposed to criticism surrounding their body from a young age, it can lead to extreme forms of self-punishment, coping mechanisms, and other destructive behaviors. Such behaviors include restrictive eating, overexercising, binging and purging, or even unsafe methods for weight loss such as laxatives (Harriger & Thompson, 2012). One study found that high school females who were overweight received less anti-dieting advice than their classmates who were in the normal weight range (Hayes et. al, 2018). Teens that are overweight or obese often seek out "quick fixes" to lose weight such as severely restricting calories or exercising to the point of exhaustion, which then can swing to the opposite side of binge-eating due to the body trying to make up for insignificant food intake. Certain studies have found that in comparison to non-overweight peers, children with obesity are more than twice as likely to promote and encourage the use of unhealthy or extreme weight control behaviors (Hayes et. al, 2018). Unfortunately, this can manifest into a lifelong struggle with relationship to food and exercise. Limitations to this conclusion are a lack of studies conducted that include adults that were overweight or obese as children who continue to struggle with disordered eating habits well into their adulthood.

Aside from a negative relationship with food, body image, and other complications, other psychological distress can occur. Due to the potential social consequences of being overweight or obese, social isolation can lead to depression and anxiety. Children as young as three years old were shown to be more likely to attribute negative adjectives with overweight individuals and choose a thinner playmate over a heavier one (Harriger & Thompson, 2012). Over time, the separation and "otherness" that overweight or obese children feel can lead to social anxiety, apathetic attitudes surrounding activities with other kids, and loneliness (Harriger & Thompson, 2012) .

3.3 Physical consequences

If there is no treatment of the condition or it continues to get worse, there are physical consequences that can arise. One such condition is adult type 2 diabetes. Various observational studies have reported a positive association with childhood obesity and risks of type 2 diabetes or coronary artery disease, but no direct causation has been found (Fang et. al, 2019). Using Mendelian randomization, Fang et. al conducted a new study that did find a causal relationship between the two. For glycemic traits, that found that for each 1-unit increase in the log-odds, having childhood obesity was associated with an increase of 0.025 pmol/L of log-transformed fasting insulin (Fang et. al, 2019). For lipid traits, each unit increase was also causally associated with a 0.047-SD reduction in HDL-c and a 0.036-sD increase in triglycerides (Fang et. al, 2019). Overall, this study concluded that there is a causal relationship between a genetic predisposition of childhood obesity, adult type 2 diabetes, and cardiovascular diseases, but more studies will need to be done in the future (Fang et. al, 2019). A second concern for overweight or obese children is osteoarthritis in late teens or early adulthood. In a similar study by Cao et. al, mendelian randomization was used to determine the causal relationship between obesity and osteoarthritis. Through several tests they were able to find evidence of a causal relationship, but more studies are needed to confirm their findings. Disaggregating the impacts of weight stigma and bias, and understanding mechanisms behind cardiometabolic risk factors among individuals with lower BMIs compared with higher BMI individuals without cardiometabolic risk remain areas of future research (Piché et. al, 2020).

4. Conclusion

The results of the analysis of multiple studies and reviews show that the issue of childhood obesity is more relevant now than ever before. Limitations to this review included a lack of data of adults (longitudinal or retrospective) who now struggle either psychologically, physically, or both with various problems that stem from being obese as a child. There are several reasons why these limitations exist. Firstly, the amount of children diagnosed with obesity has increased over the last several decades, and so the number of adults now who were children in the late 20th century is not as large as it will be in the coming years. Therefore, this makes for a lack of potential subjects for any study that may be conducted. Furthermore, there are ethical considerations to be made as well. Because of the vulnerable population and conditions, it can be more difficult to get the approval from review boards or obtain a subject group that is large enough to have sufficient data.

However, from the studies that have been successful, we know that being overweight or obese in childhood can have numerous negative consequences. Psychologically, it can impact relationship with food, exercise, and body image not only in childhood, but it can persist throughout the teenage years and possibly adulthood. It can also create social isolation, anxiety, depression, and apathy surrounding activities with classmates, parents, and friends. Physically, a causal relationship between childhood obesity and adult type 2 diabetes, cardiovascular disease, and osteoarthritis was found through mendelian randomization studies. Overall, more data is needed to make any solid conclusions about any physical or psychological damage that childhood obesity can cause throughout all stages of life.

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