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Ana Cruz  
*Old Dominion University*

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# Effects of COVID-19 in the Status of Childhood Obesity in the United States: A Literature Review

Ana Cruz

Old Dominion University

## Abstract

**Introduction:** The main hypothesis is that COVID-19 affects the prevalence of childhood obesity in the United States due the precautions needed to contain the pandemic.

**Methods:** The methods used in this semi-systematic literature review includes web-based research from the following sources: Centers for Disease Control and Prevention, Google Scholar, ResearchGate, and EBSCOhost. The search was limited to children ages 5 to 19 years old with diagnosed obesity.

**Results:** The review found that COVID-19 pandemic has greatly increased the rate of childhood obesity in the United States due to changes in diet, increased screen time, and less physical activity.

**Discussion:** There are several discussions that pertain to childhood obesity during this pandemic, however, there is very little discussion on how to combat this issue. There are also several children's hospital weight management programs that aim to educate children and parents, but change is first needed from the personal and interpersonal level.

*Key Words: Children, obesity, childhood obesity, mental health, BMI, COVID-19, pandemic*

## Background:

Since the COVID-19 pandemic began, over 90% of students have converted to virtual learning one way or another (McElrath, 2020). Coronavirus is a respiratory illness that can easily spread through oral-generated droplets or coughing/sneezing. This virus spreads rapidly, presents with flu-like symptoms, and can cause mild to severe respiratory issues. Due to its highly infectious nature, this led to mask mandates, social distancing, quarantines, and shutdowns of many establishments (CDC, 2021). School and College campuses are part of the establishments that had to shut down; consequently, implementing virtual learning for many students. Many children, particularly those with obesity, have been highly affected through their physical and mental status.

Obesity is a serious public health concern that impacts millions of children and adolescents worldwide (CDC, 2018). It can be caused by an unbalanced diet, improper sleeping schedules, and a sedentary lifestyle. In some cases, obesity can also be inherited through genetics (Sheikh et. al. 2017). This issue is correlated to several health outcomes such as continued obesity into adulthood, several physical conditions like cardiac disease, and an array of psychological disorders such as depression and anxiety. There are a few interventions such as weight loss programs, pharmaceutical options, and in severe cases, surgical procedures (Public Education Committee, 2021).

As the pandemic continues, the prevalence of childhood obesity also continues to rise as the social distancing, quarantines, and shutdowns are leading to changes in their diets, increased screen time, and less physical activity.

## Methods:

In this semi-systematic literature review, the utilized methods are web-based searches from Centers for Disease Control and Prevention, United States Census Bureau, Google Scholar, ResearchGate, and EBSCOhost. The search inclusions were limited to children ages 5 to 19 years old with diagnosed obesity and those who were affected by the Coronavirus disease. The articles used were no later than 2017 to ensure relevance of the content. The review includes two qualitative studies - one with a summative analysis approach and one with conventional content analysis approach. In one of the qualitative studies published in the Journal of Pediatric Nursing, the researchers carefully selected 16 parents whose children have obesity. They conducted an unstructured interview lasting 30 to 60 minutes. General open-ended questions that ask how their child's obesity status was affected by the pandemic (Razi & Nasiri, 2022).

## Results:

The data collection lasted for about 9 months and the researchers were able to interview 15 mothers and 1 father. The review found that COVID-19 pandemic has greatly increased the rate of childhood obesity in the United States due to changes in diet, increased screen time, and less socialization.

## Changes in Diet

As the pandemic began, challenges in nutrition have become more rampant, especially in middle to low income families (Carducci, B., Keats, E.C., Ruel, M. et al. 2021). The biggest challenge of COVID-19 in terms of nutrition security is the loss of programs such as school meal programs. Many school children rely on the lunches provided in school, and the schools do the best of their ability to make a balanced diet. School lunches typically offer foods with protein, carbohydrates, dairy like milk and cheese, and fruits. The schools also regulate eating time for students by allotting lunch times and prohibiting food during class. Throughout the pandemic, overeating became an issue as children spent all their time at home due to quarantines and implementation of virtual learning. At home, children's eating times are not as regulated as at school, and they can choose to snack freely (Razi & Nasiri, 2022). The types of food that are also more accessible throughout the pandemic have shifted due to a supply shock, loss of employment, and less production of food, especially the nutritious and healthy ones (Carducci et al. 2021).

## Increased Screen Time and Sedentary Behavior

Prior to the pandemic, it was acceptable that children spend time in afterschool activities or join various sports clubs. This was a way for the children to enjoy their time outdoors and away from screens. These activities were highly beneficial and encouraged as studies showed that too much screen time for children is associated with externalizing and internalizing problems. Externalizing behavior includes aggressiveness and strong cravings for attention, while internalizing behavior includes depression and anxiety (Eirich et al. 2022). Due to the pandemic, after school activities and sports clubs were suspended and temporarily closed to avoid further spread of the virus. Parents of the study mentioned that their children used to be active, but have become more sedentary throughout the pandemic (Razi & Nasiri, 2022).

Many parents also observed that their children have increased use of screens, whether it is for educational purposes or entertainment. Since children are always home, it makes limiting their screen times challenging because it is also their tool for education. Virtual learning has become the norm, and in addition, virtual socialization through social media has become more rampant. Prior to COVID-19, parents already have raised their concerns about high amounts of screen time in children as this contributes to their sedentary lifestyle, moreso now with the pandemic.

## Discussions:

This article aims to discuss the effects of the COVID-19 pandemic on childhood obesity. As the results expanded on how changes in diet, increased screen time, and less physical activity contributed to obesity, there have been no mentions of interventions in the articles used for this literature review. There are a few interventions that tackle this issue and help reduce the prevalence of childhood obesity, such as weight loss programs, pharmaceutical interventions, and surgical procedures.

- Weight loss programs are the most practical for children in order to sustain a healthy lifestyle for a long time. Weight loss programs include physical activities as well as educational materials regarding proper nutrition, and the knowledge a child can acquire through these programs may become long lasting. Beyond reducing their weight, weight loss programs also aim to boost children's confidence and self-esteem. This can be considered as interpersonal or community intervention. This is most likely the only intervention that addresses the mental health aspect of childhood obesity.
- Pharmaceutical interventions entails several medications created for weight loss that children can use such as phentermine and orlistat. These medications should still be accompanied by physical activity and a balanced diet, and these medications are also only recommended to those extremely obese patients. Orlistat is one of the common anti-obesity drugs prescribed by pediatricians, and there was a study conducted to prove its effectiveness. A double-blind study was conducted with over 530 obese adolescent ages 12 to 16. The intervention group decreased their BMI by an average of 0.55kg/m<sup>2</sup> and the control group with placebo increased their BMI (Rogovik, A & Goldman, R 2011). Medications, however, only prove to show small to moderate short-term effects - it cannot be maintained without proper follow-ups and behavioral interventions (Whitlock, E et. al. 2008). This is considered an individual intervention

- Surgical procedures are an aggressive kind of intervention, and it is only for extreme cases of childhood obesity. There are studies that show childhood obesity can lead into adulthood obesity, and so surgical treatments are becoming more prominent (Public Education Committee, 2021). According to the American Society for Metabolic and Bariatric Surgery, children who are eligible for a gastric bypass, laparoscopic adjustable gastric banding, or vertical sleeve gastrectomy must fall into the following categories:

## Conclusions:

Overall, changes in diet, steep reduction in physical activity, and increased screen time was observed in many children as an effect of COVID-19. Due to the shortage of food supplies, particularly healthier options, it became more difficult to provide a balanced diet for children. In addition, loss of jobs made it more difficult to attain healthier foods, and families in low-to-middle income groups resorted to more processed and unhealthy foods. Due to establishment closings and school closures, school children were also vulnerable to less physical activity, and they were more likely to spend time on their computers, phones, televisions, etc. Virtual learning environments also encouraged more use of screens, thus, contributing to the current sedentary lifestyle children are experiencing today. Despite all the contributing factors to childhood obesity, there are still minimal interventions in place. As the pandemic continues, further interventions are still needed to tackle the issue, especially ones that focus on the mental health aspect of children with obesity.

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Contact Email(s): [acruz001@odu.edu](mailto:acruz001@odu.edu), [anamariellecruz@gmail.com](mailto:anamariellecruz@gmail.com)