

What is the Problem with Child and Adolescent Obesity? What was Working? And How May COVID-19 Make it Worse?

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Introduction

Prior to the COVID-19 pandemic, 19.3% (14.4 million) children and adolescents (aged 2-19 years) were categorized as obese ($\text{BMI} \geq 30 \text{ kg/m}^2$), 31.8% of children were overweight ($\text{BMI} \geq 25 \text{ kg/m}^2$), and 1.6% to 11.9% of severely obese children ($\text{BMI} \geq 35 \text{ kg/m}^2$) in the United States (US) (1,2). Major factors propagating this epidemic of obesity are socioeconomic statuses, ethnic backgrounds and how developed the child's community is (2). And unfortunately, if a child becomes overweight prior to puberty, they are 60% more likely to become obese as adults (3). In the past decade, significant progress has been made initiated by health officials to combat child obesity in the US (4). Innovative health strategies such as implementing healthy nutrition plans, incorporating exercises that are entertaining to children, and programs focused on increasing daily physical activity have encouraged sedentary children to get moving. In fact, some of these strategies decreased body fat amounts by 0.4 to 2.1% (5). Unfortunately, these strategies were substantially hindered beginning in March 2020 due to quarantine and economic burdens. The COVID-19 pandemic caused an increase in sedentary lifestyles, overall screen time, reliance on processed foods and worsening socioeconomic statuses for most parents and children (7,8,9). The change from normal lifestyles due to the COVID-19 pandemic is predicted to increase the already difficult epidemic of obesity by approximately 2.373% in a single year (6).

This article will discuss obesity and children/adolescents prior to the COVID-19 pandemic, and specifically, highlight pre-pandemic contributing factors that may potentially increase childhood obesity during/post-COVID-19 pandemic. Additionally, this article will investigate effective strategies used to combat childhood obesity prior to COVID-19, and how the cessation of these programs has negatively impacted children's health. Lastly, this review will consider child obesity predictions based on the existing trends. Due to decreased physical activity, increased screen time, diminished parental assistance, and an enjoyment of poor nutrition and sedentary lifestyles, the COVID-19 pandemic is making what was already a difficult feat even more challenging. We as a community need to do our best in promoting the health of our children, because in the end, they are the health of our future.

Contributing Factors to the Obesity Epidemic

- Economic Effects and Children's Nutrition

The disparity in socioeconomic statuses of individuals can lead to different outcomes in healthcare and obesity rates (9). Children with households below the federal poverty line were 1.3 times more likely to be overweight, 1.6 times more likely to be obese and 1.2 times more likely to be severely overweight (10). Lower income households may have less access to nutritious food and physical fitness opportunities due to their increased cost (9). Many low income households also rely on school lunches to adequately feed children who may not have access to enough food at home (10). Although these lunches may help families feed their children, it may not be providing children with nutritional value. A study assessing low income family's food consumption discovered that many children in low-income households did not consume the recommended number of fruits and vegetables because they did not have access to these foods at home or school (10). Due to the lack of capital and possibly the lack of knowledge into adequate nutrition, the obesity rate in these households continues to climb higher than neighboring houses of higher economic status (9). It should also be noted obesity was linked with a decreased household educational attainment as well (10). If the household educational attainment was a high school diploma or less, the child will be 1.5 times more likely obese and 2.4 times more likely severely obese (10).

- Community Location and Environment

Although the family's economic status may play a large part in the child's health with regards to obesity, another major factor is the location of the family home (9). Children living in rural locations are 26% more likely to become obese than those in urban areas due to diminished access to physical activity promoting programs (9). Rural communities may not have the same access to recreational centers, parks, sport programs, gymnasiums, and safe active transportation when compared to urban communities (9). Communities can provide opportunities for recreational physical activity with parks, open spaces, and policies to support this capacity (9). A study assessing the effect of the environment on adolescent obesity determined that it was a beneficial to have a "culture of physical activity" in the community because it kept the families engaged and participating in their children's health (11). We should continue to promote this idea of health and well being in our communities.

- Ethnicity and Race

Another factor linked to child obesity rates is ethnicity and race. According to Tester and colleagues (2021) when compared to Non-Hispanic white children, Non-Hispanic African Americans were 1.5 and 1.7 times more likely to be obese or severely obese respectively and Hispanic children were 2.0 and 2.3 times more likely to be obese or severely obese respectively (10). The most prominent disparity between races has been shown to be within the severe obesity classification (9). Daly and colleagues (2017) determined that Hispanic children specifically have a higher likelihood of becoming severely obese (9). Recent studies attribute race, ethnicity, socioeconomic status, and community type to the increasing obesity rates; however, researchers note that obesity is a multi-faceted condition that cannot be attributed to a singular factor.

Factors we can Manipulate

- Screen Time and Decreased Physical Activity

Although many factors effecting obesity cannot be changed, there are some variables that we can manipulate more effectively. Some manipulated variables include of the use screened technology, as well as support in children's adherence to already challenging physical fitness programs and lifestyle habits. These variables although difficult to manipulate can be very effective in combating obesity and the lack of physical fitness in our children.

Screen time is defined as the amount of time using a computer, television, video game console or cell phone in a particular time frame. Less than 40% of children in the US meet the recommended screen time guidelines of less than two hours of screen time per day (11). There is currently a strong relationship between adolescent screen time to both obesity and severe obesity (10).

Currently 33% of obese children and 37.2% of severely obese children were watching more than the recommended amount of screen time per day (10). Obese and severely obese children were also 1.5 to 2.0 times more likely to obtain over 4 hours of screen time per day (10). Severely obese children were twice as likely to engage in double the amount of screen time recommended (10). Additionally, approximately 25% of children with BMIs within the normal or overweight categories participated in over 2 hours of screen time per day as well (10). These results indicate that normal and overweight weight children also participate in excessive screen time but to a lesser extent than children who are obese or severely obese.

It is assumed this relationship of screen time and obesity may be due to an increasing culture of sedentary amusement and desire for instant gratification over participation in physical activity

(12). In a culture that promotes instant gratification through social media, video games and television, children may not pursue healthy activities such as physical fitness due to its difficulty and lack of entertainment. In fact, two studies noted 63% of obese children dropped out or failed to meet the set parameters of their obesity treatment programs. In a culture of instant gratification, it may be difficult to replace children's screen time with physical fitness, but studies now indicate fun physical fitness may be key in its replacement.

Effective Strategies to Combat Child Obesity

Recent studies have looked into the most adherable exercise and fitness programs (3,5). These strategies aim to support participant weight loss, but for many children their goal is to simply become more physically active. Bülbül (2020) suggests more movement in daily activities such as taking the stairs more often, gardening, washing vehicles, as well as sporting activities such as soccer, basketball, or biking can aid in becoming more physically active (5). These activities should be selected for the child to enjoy and improve muscular and bone strength, aerobic fitness, flexibility, and weight loss by means of fat mass. Exercise programs should begin at a lower intensity and duration and progressively increase as the child becomes more comfortable. If exercise programs begin too vigorously, children will not adhere to them for a long duration because it will likely discourage them and make them want to return to what they had enjoyed previously (5). Combined exercises such as cycling and running with resistance training may be most beneficial for the child's health. Bubul (2020) argues the best exercises are those that are entertaining (5). Health professionals determine that children may become bored at a faster rate and a good way to support this is by making the programs shorter in duration but more abundant throughout the week (5). According to the ACSM, children and adolescents should accumulate at least 60 minutes of physical activity daily including of their transportation, physical education, sport, free play and planned exercise regimens. The parents or guardians should positively enforce participation in physical activity daily for the best results in combating obesity. A good way to make children begin exercising, if in a sedentary lifestyle, is through interactive video games (5). They should create an environment and program that allows the child to enjoy the workouts they are participating in. A push for more entertaining or fun and accessible activities are some of the most beneficial ways to have our youth engage in physical activity. This is why interactive video games may be an advantageous introduction into physical activity (5).

Physical fitness alone will not work to combat obesity without proper eating habits. Diet by itself can beneficially decrease both fat and non-fat body mass (5). Proper dieting prevents weight loss by maintaining non-fat body mass (5). The number one dieting method to reducing obesity in children is by minimizing kids overall caloric intake (5). This does not mean that we should not input proper nutritious foods into their diet but overall, the large number of calories obese children often intake is what can be manipulated easiest and cause the most benefit. As explained previously some rural or lower income communities may have less nutritional education and may also be hesitant in implementing new dieting strategies. Decreased caloric intakes and proper nutrition should be taught among those individuals who are unaware.

Future Projections due to by COVID-19

Nearly every person worldwide, was affected by the COVID-19 pandemic. 138 countries closed their children's schools, adults/parents lost their jobs or were forced to make arrangements to work from home, and stay at home orders were hard pressed on most individuals (7). It was shown that adults were given decent solutions with regards to their health and fitness while children were slightly neglected with these efforts and caused an increase in depression and contributing to a projected increase in childhood obesity (8).

In a microsimulation of the United States, scientists projected that by March 2021 the childhood obesity rate will increase by 2.373% (1.27 million increase in obese children) (6). Unfortunately, there is no current data to verify this prediction as of April of 2021, but the likely cause of this prediction has been thoroughly examined. Those assumed to have the highest risk are boys, non-Hispanic blacks, and Hispanic individuals (6). The main contributing factors to the increase in the childhood obesity epidemic due to COVID-19 are school closures, lack of parental support, stay at home orders, screen time, and a general added encompassing stress level.

As aforementioned, many schools worldwide closed their doors, and with this so did most of their meal services.. Within the US, 30 million children rely on, or utilize the National School Lunch Program and a 14.7 million utilize breakfast programs (7). When schools close, it made receiving meals difficult and detrimentally affected the families who then had to find new ways to feed their children for one or two more meals a day. Many parents were let go from their jobs or instructed to change how they complete their work either work from home orders or with

increased safety precautions. This increased stress from job insecurity and isolation caused an increase in difficulty for parents to be a supportive presence for their children (8).

The numerous closures also caused children to then work from home. The isolation caused major depression and psychological disorders that lead to overeating or emotional eating particularly in adolescent females (8). Children with obesity have an increased risk of depression than other children and often overeat due to the increased stress (8). The decreased specificity or recognition of mealtimes also caused increased daily snacking typically upon processed or unhealthy foods which detrimentally effected these kids' health (8).

Simple activities such as walking to and from classes, recess, use of parks and physical education classes were all stopped due to COVID-19 (8). The lack of normal physical activities in adolescents are clearly linked to an increase in anxiety (8). Due to this lack of activity, children began utilizing screened technology more than they already had previously. Now half of children's meals were completed in front of screens, majority of students participated in school classes with screens and screen usage became an even more common pass time when restricted from outdoor activities (7,8). Childhood obesity is in urgent need of increased public health interventions to promote more active lifestyles, better dieting, and an increased wellbeing for our children (6).

Conclusion

Childhood obesity is a national problem and needs to be looked at like the serious epidemic it is. Although cardiovascular disease, hypertension, diabetes, and metabolic disease cannot always be avoided, they can be significantly mitigated by correcting obesity which is largely associated with each condition (3). Obesity is not an easy condition to regulate. As a society we have learned to enjoy our new sedentary lifestyles with all the fun we think we might need in the palm of our hands (12). Screened technology and the lack of physical activity has caused us to become complacent in the fight against obesity. The COVID-19 pandemic is projected to increase the already large population of obese children by 1.27 million children (6). This increase is approximately twice the population of Las Vegas, Nevada in children alone. This prediction should not be taken lightly and we as a community and a country must come together to mitigate this increase to the best of our ability or the COVID-19 pandemic will end up damaging us more than it already has.

Apply It:

- ❖ This article will provide information that will help educate parents, and families on the severity of the adolescent obesity epidemic and COVID-19's possible effects on our children.
- ❖ The fitness Professional will learn proper exercise and nutritional strategies for children dealing with obesity that are both adherable as well as successful.

Bridging the Gap:

- ❖ Although cardiovascular disease, hypertension, diabetes, and metabolic disease cannot always be avoided, they can be significantly mitigated by correcting obesity which is largely associated with each condition (3).
- ❖ In a microsimulation of the United States, scientists projected that by March 2021 the childhood obesity rate will increase by 2.373% (1.27 million increase in obese children) (6).
- ❖ Prior to the COVID-19 pandemic, 19.3% (14.4 million) children and adolescents (aged 2-19 years) were categorized as obese ($BMI \geq 30 \text{ kg/m}^2$), 31.8% of children were overweight ($BMI \geq 25 \text{ kg/m}^2$), and 1.6% to 11.9% of severely obese children ($BMI \geq 35 \text{ kg/m}^2$) in the United States (US) (1,2).

Summary Statement:

Although the COVID-19 pandemic has been significantly damaging to children in America, few people are acknowledging the previously and currently detrimental obesity epidemic effecting our children as well as the effects COVID-19 may have upon it. Obesity is highly linked with increased rates of non-communicable diseases and should be recognized for improved support.

Pulled Text:

The change from normal lifestyles due to the COVID-19 pandemic is predicted to increase the already difficult epidemic of obesity by approximately 2.373% in a single year (6).

Bio:

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