

Childhood Obesity in the U.S.

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An estimated 17 percent of children in the U.S. ages 2-19 years old are obese. In terms of Body Mass Index (BMI), a measure of weight in relation to height, children with a BMI at or above the 95th percentile for others of the same age and sex are considered obese. The population of obese children in the U.S. can be categorized, albeit broadly, by age and geographical location. Moreover, further examination of the population of children who face obesity shows that there are significant disparities regarding race and ethnicity. Additional disparities among those who suffer can be attributed to differences in socioeconomic status. Childhood obesity is greatly influenced by genetic, behavioral, and environmental factors. While some genetic disorders are known to result in obesity, lack of physical activity and consumption of fatty foods are also known to have an affect on weight. Finally environmental factors, many of which can be categorized as social determinants of health, also influence obesity.

Many outside agencies and university teams are researching various intervention programs in the hopes discovering the characteristics of those that are successful at reducing the prevalence of childhood obesity. Careful analysis of the peer-reviewed articles depicting their findings shows that the most successful interventions are age-specific. Amid younger children, family-based intervention programs that educate parents on the components of a healthy lifestyle are most effective. Meanwhile, school-based programs that promote physical activity are among the most successful forms of intervention with respect to older children.

The prevalence of childhood obesity in the United States has more than tripled over the past thirty years¹. Rising obesity rates throughout the U.S. have introduced an increasing number of children to both diseases that once only affected adults, and the social consequences that often accompany obesity. Although recent intervention programs aimed at reducing the prevalence of childhood obesity are as diverse as the amount of children who struggle with obesity nationwide, the most successful interventions are age-specific. Amid younger children, family-based intervention programs that educate parents on the components of a healthy lifestyle are most effective. Meanwhile, school-based programs that promote physical activity are among the most successful forms of intervention with respect to older children.

Obesity is the result of a caloric imbalance meaning the amount of calories consumed by an individual is not effectively countered by the amount of calories expended. Body Mass Index (BMI) assesses an individual's weight in relation to his or her height, and may be used a method of measuring obesity. It is important to note, however, that even though a BMI measurement may effectively serve as a person's weight status, it is not a direct measure of body fatness.² In terms of BMI, the CDC categorizes a child whose BMI is at or above the 95th percentile for children of the same age and sex as obese.

Suffering from childhood obesity can lead to many negative health effects, both physical and psychological. For one, obese children have a greater chance of developing bone and joint problems. They are also more likely to develop risk factors for cardiovascular disease, such as high cholesterol and high

blood pressure. In a population-based sample of obese children ages five to seventeen years old, 70% had at least one risk factor for cardiovascular disease.² Children who struggle with obesity are also more likely to suffer the social consequences, some of which include low self-esteem and depression.

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In 2008, the Pediatric Nutrition Surveillance Survey³ revealed that 12.4% of children ages two to five in the U.S. were suffering from obesity. That same year, the National Health and Nutrition Examination Survey¹ showed that 19.6% of children ages six to eleven and 18.1% of adolescents ages twelve to nineteen years old were also considered obese. The prevalence of obesity among children also depends on

geographical region. According to the National Longitudinal Survey of Youth, 40.32% of obese youth live in the southern region of the U.S. Meanwhile 14.1%, 25.5%, and 20.3% reside in the northeast, Central, and western parts of the nation, respectively.⁴

Further examination of the population of children who face obesity shows that there are significant disparities regarding race and ethnicity. The results of the 1999-2000 NHANES⁵ showed that among adolescent boys ages twelve to nineteen, 23.6% of non-Hispanic blacks and 23.4% of Mexican Americans suffered from obesity compared to only 12.7% of non-Hispanic white adolescent boys the same age. Similarly, the survey showed significant disparities in the prevalence of obesity among adolescent girls. For instance, only 10.0%

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of non-Hispanic white adolescent girls were obese, whereas double that amount of non-Hispanic black and 16.0% of Mexican-American adolescent girls faced the same epidemic. Comparable differences regarding the prevalence of obesity among infants from birth to 23 months old were also addressed in the survey; however, significance could not formally be declared since not enough children in this age group were tested. Today, the prevalence of obesity is highest among American Indian or Alaska Native children at 22.2%.⁶

Differences in socioeconomic status create more disparities among children suffering from obesity. For example between the years 2003-2006, 22.0% of obese children ages six to eleven lived below the poverty line. Meanwhile, only 13.5% resided in households earning twice the poverty line amount.⁷ This imbalance is also apparent among low-income preschoolers, as one out of every seven of them is obese.⁶ In addition to household income, the amount of education a mother has received also correlates with whether or not her child is obese. The National Longitudinal Survey of Youth states that 14.3% of children ages three to eleven whose mothers' work less than thirty-five hours per week, and do not hold a high school degree, are obese. Among children of the same age whose mothers work the same range of hours but have some form of college education, the prevalence of obesity drops down to 7.3%.⁸ The effect of socioeconomic disparities on childhood obesity is clear. There are, however, additional factors some of which are influenced by socioeconomic status that also have an effect on the health of a child.

FACTORS AFFECTING CHILDHOOD OBESITY

Childhood obesity is greatly affected by genetic, behavioral, and environmental factors. There are genetic disorders, such as Prader-Willi syndrome, that trigger obesity; however, genetic factors alone are not enough to significantly affect weight.² A combination of genetic susceptibilities and either behavioral or environmental factors is more likely to have contributed to increasing childhood obesity rates throughout the nation, in addition to the effect that behavioral factors and environmental factors have on their own.²

Behavioral factors that affect a child's weight involve energy intake and amount of physical activity received.² For instance, consuming large amounts of fatty foods and sugary sodas that are high in calories is known to contribute to obesity. Likewise, lack of physical activity and sedentary tendencies are examples of other behaviors that when employed add to the childhood obesity epidemic. Less than one-third of high school students currently meet recommended levels of physical activity despite the fact that physical activity has been linked to helping decrease blood pressure among children suffering from obesity. The types of food a child consumes as well as the amount of physical activity he or she engages in are examples of behavioral factors that affect childhood obesity. Healthy habits created by children during childhood are likely to persist with them through adulthood.²

Environmental factors, many of which are social determinants of health, also influence childhood obesity. For example, low-income neighborhoods have reduced access to recreational facilities and higher crime rates. This, in turn, limits

the amount of time a child is able to spend outside engaging in physical activity. People living in minority neighborhoods are also at a disadvantage regarding food choice since quality foods can be more expensive and less accessible to those living in economically deprived neighborhoods.⁹ Thus, children living in either a low-income or minority neighborhood are more likely to struggle with obesity as a result of the environment in which they reside.

FAMILY-BASED INTERVENTIONS

Many outside agencies and university teams are researching various intervention programs in the hopes of finding one that is successful at reducing the prevalence of childhood obesity. Julia Wolman and her colleagues¹⁰ researched an intervention program by the name of Fighting Fit Tots. This program, targeted at obese preschool aged children in Lambeth, South London, consisted of eleven weekly meetings during which parents and their unhealthy children met in a local venue within the community. Each meeting lasted two hours, the first forty-five minutes of which parents and children spent together, engaging in physical activity. With a fitness instructor present, they jumped, hopped, skipped, and danced together to a variety of popular children's music. Afterwards there was a fifteen-minute break before parents alone attended a healthy lifestyle workshop given by a nutritionist. They did not have to worry about watching their children as free babysitting was provided. Over the course of the eleven-week program a new topic was discussed each week, examples of which included: "Reading food labels," "Helping fussy eaters," and "Keeping good habits going".¹⁰

At the end of the eleven weeks, parents reported that their children showed an increased willingness to drink water and try new foods at home, especially fruits and vegetables. Also, they noted that their children spent less time watching television and displayed increased levels of confidence. Thus, Wolman and her colleagues concluded that health professionals should implement similar family-based obesity prevention programs when targeting preschool aged children. They also established that a successful intervention designed to reduce the prevalence of obesity among young children should be open to all children and families who are interested in becoming healthier. Doing so created an ambiance conducive to drawing in the target parents and children—that is those who were recommended by a health professional to join the Fighting Fit Tots program nearest to them.¹⁰

Research conducted by Lydian Veldhuis and his colleagues¹¹ further demonstrates the effectiveness of family-based prevention programs. The program they studied, referred to only as the "prevention protocol," obtained BMIs and waist circumferences from random samples of five-year-old children throughout the Netherlands. After discovering which children were by definition obese, their respective parents were personally contacted and invited to three lifestyle counseling sessions, the first of which was to take place one month after the original health check, somewhere within the community in which they resided. Four behavior changes: being physically active, having breakfast, drinking sweet

beverages, and watching television/playing computer games known to affect the health of children were the main focuses of these sessions, however, parents were also given personal advice on how to lead healthy lifestyles with respect to themselves and their children. Although plenty of note taking was involved outside of the program (as parents were required to keep a log of the net caloric intake of their children) the personal aspect of the sessions kept them motivated.

Because this intervention is still going on, a formal conclusion cannot be made yet. It is however hypothesized based on current progress that after two years of follow up, the children in the intervention group whose parents attended the counseling sessions will have lower BMIs and waist circumferences. Likewise, it is predicted that they will spend more time being physically active, consume less sweet beverages, and watch less television than the obese children in the control group. Thus, the research conducted on this study by Veldhuis and his colleagues provides more proof in favor of the notion that family-based intervention programs are most effective for young children.¹¹

With respect to older children, family-based intervention programs are not as effective. Rather, interventions in the form of school-based programs that promote physical activity have proven to be the most successful. Geraldine Budd and Stella Volpe¹² researched multiple school-based obesity prevention programs, one of which was a program by the name of “Planet Health,” implemented in grades six to eight of 10 randomly selected schools in Boston. As part of this program, lessons intended to decrease television viewing and computer time to no more than 2 hours/day as well as increase the overall moderate to vigorous physical activity (MVPA) of young boys and girls, were incorporated into math, science, English, social studies, and physical education classes. Likewise, lessons designed to reduce the intake of fatty foods, and increase the overall amount of fruits and vegetables consumed among middle school aged children were also incorporated into everyday school subjects. The intervention program met Massachusetts’ state curriculum standards and lasted for two years.

After two years, the overweight prevalence for girls participating in the intervention decreased from 23.6% to 20.3%, although no significant reduction in BMI was found for boys. Also, the dietary patterns of girls participating in the intervention improved, and the amount of time both boys and girls spent watching television decreased.¹²

TARGETING OLDER CHILDREN

Budd and Volpe also researched a healthy heart initiative in Stanford that similarly promoted physical activity in schools and received positive results. This study took place in Northern California, where tenth graders from two high schools in the same district received three, fifty minute classes a week for seven weeks on healthy heart nutrition, stress

reduction, how to avoid smoking, and ways to engage in fun physical activity. Once the intervention program concluded, the average BMI for boys involved only increased by 0.1, compared to 0.4 for those in the control group. Also, the average BMI for girls involved in the intervention decreased by 0.3, whereas it stayed the same for those in the control group. Overall, the general physical activity habits of everyone in the intervention group improved.

In both of the interventions that Budd and Volpe studied, older children, ranging in age from 12-15 years old, were positively affected. Budd figured that a major difference between older and younger children in relation to which type of intervention suited them best was that older children were more likely to possess the inner-strength and will power necessary to maintain behavior change. Thus, they were more likely to engage in physical activity on their own after learning about it in school, through programs such as “Planet Health”.¹²

Unfortunately, the number of unsuccessful intervention programs outweighs the number of successful ones. The unsuccessful intervention programs fail to approach the issue of childhood obesity in an innovative way and engage the attention of either parents or children. For example, many school-based obesity prevention programs have bombed because they failed to promote, say, physical activity or the banning of an unhealthy food in an

interesting way.¹³ The effect of breastfeeding on obesity was tested in Belarus by Michael Kramer and his colleagues.¹⁴ Their research, a cluster-randomized trial of a breast-feeding promotion intervention based on the WHO/UNICEF Baby-Friendly Hospital Initiative, ultimately showed that even after a significant increase in the amount of Belarusian babies breastfed throughout infancy, there was no significant change in the prevalence of obesity among them six and a half years later.

CONCLUSION

A model, evidence-based program designed to combat childhood obesity should be age-specific. In order to reduce the prevalence of obesity among younger, preschool aged children, the best form of intervention is family-based as was shown in research done by Wolman and her colleagues on the eleven-week long program, “Fighting Fit Tots.” Family-based interventions ensure that the parents of a child suffering from obesity learn about the components of a healthy lifestyle by attending, with their child, weekly workshops set up somewhere within the community. These workshops should welcome any and all parent-child pairs so long as the parents are genuinely interested in improving the health of their children. Preschool aged children do not yet have the will power required of intervention programs that rely on education, whereas middle and high school aged children

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do. Thus model, evidence-based programs for older children should take place during school and promote physical activity through education, as was the case with “Planet Health” and the healthy heart initiative in Stanford.

As of now, no magic solution to the childhood obesity epidemic exists. Greatly influenced by genetic, behavioral, and environmental factors, a malady of this caliber will require that any attempt at a solution address more than just the scientific aspects of the problem. The qualities of a successful intervention program are clear. It is now time to act on what has been discovered in order to reduce the prevalence of childhood obesity in the United States.

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CA Obesity Prevention Program Results

By Brian Wolf

The rising level of childhood obesity is a major public health concern that requires a concerted effort among parents, educators, politicians, schools, the government, and, most importantly, children to reverse the trend. The Central California Regional Obesity Prevention program, a 3-year, \$10 million regional initiative, was implemented in eight Central California counties in collaboration of various public health department directors to curtail the rising level of obesity. The goals of the program are to promote safe places for physical activity in places such as parks and to increase the access to fresh fruits and vegetables. The central strategy for the program utilizes community resident engagement to change various built environments that range from parks to schools. As an example, the program helped to create farmers markets that accept food stamps. Through the utilization of food stamps, individuals who may not be able to afford fresh produce have the opportunity to obtain affordable fruits and vegetables. To promote physical activity in a community, the program also created maps for walking trails and park spaces in the area. Ensuring successful advocacy to prevent closure of clinics, along with continued funding, provided individuals to seek medical care if needed. It is hoped that individuals would be more aware of their environment and will take advantage of what the region offers. The results of this program suggest that individuals, as well as community institutions (e.g., schools and hospitals), must work together to prevent childhood obesity.

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