

Childhood Obesity:
Turning a Risk Factor into a Solution
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Childhood Obesity

Abstract

Obesity is a chronic health condition that is increasing at alarming rates in the United States, particularly among low-income children. This literature review examines several of the factors that place low-income children at risk for developing obesity: environmental (i.e., lack of access to healthy affordable food and media exposure to commercials for junk food); psychological (i.e., parental stress and comfort eating); and biological (i.e., low activity levels and insufficient sleep). This examination points out that none of these factors operate in isolation but are intricately inter-connected, as suggested by the biopsychosocial model of disease provided by Psychology. A model for an intervention to improve health is proposed that utilizes a television commercial to motivate typically sedentary children to exercise.

Childhood Obesity

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Obesity is a critical health problem that is increasing worldwide, and in the United States in particular. In 2012, The Center for Disease Control and Prevention (CDC) identified obesity as a leading cause of death of adults in the US, second only to heart disease, and predicted it to soon become the first. An alarming one in five of the nation's youth has been found to already be obese, as defined as a weight to height ratio, Body Mass Index, of above 95%. Children who are Black or Hispanic or live in low-income neighborhoods are at almost twice the risk for obesity as non-Hispanic white youth (CDC, n.d.-a). Later in life, these children will face increased risk for diabetes, cancer, and heart disease (CDC, n.d.-b). But during their childhood, they are already susceptible to a poorer quality of life marked by illness, low energy, and low self esteem. There is a multitude of environmental, psychological, and biological causal factors that lead children to overeat, make innutritious food choices, and not exercise sufficiently. Psychology, as a science of human behavior, offers a powerful perspective on the interwoven nature of these factors and can point the way towards the development of successful interventions to halt the march of this epidemic.

Social and Environmental Risk Factors

Environmental factors such as poverty and lack of access to healthy foods within low-income communities can significantly contribute to obesity. More than 23 million Americans live in what the United States Department of Agriculture (USDA) calls a Food Desert: rural towns or urban neighborhoods without ready access to affordable healthy food (USDA, n.d.). In these communities, the only places to buy food are fast-food restaurants and convenience stores that sell fatty, sugary, processed products, according to

Childhood Obesity

the Food Research and Action Center (FRAC, n.d.). This fast food consumption is associated with a diet high in calories and low in nutrients, and frequent consumption may lead to weight gain. Researchers at the Rudd Center of Yale University suggest that fast food companies engineer “hyperpalatable foods” that trigger an addictive process via neurocircuitry much the same as addictive drugs (Gearhardt, et al., 2011). These hyperpalatable foods served at McDonald’s, for instance, are significantly higher in fats, sugar, and salt than more healthy traditional foods (e.g. vegetables and fruits). In addition to a lack of access to healthy food, parents working long hours outside of the home or who have more than one job have little time to prepare meals at home, making it harder to establish the routine of sitting down for a healthy dinner together as family—a routine that creates a positive idea about food for children.

Children’s environments are also saturated by the presence of media. Children spend 44.5 hours a week in front of electronic screens (American Psychological Association, 2004). Screen time amounts to nine hours a day for children of ethnic minorities, more than the six hours a day watched by white children. Not only are children moving less when they watch television, but they are also more exposed to the media’s messages. Low-income youth are exposed to disproportionately more marketing and advertising for obesity-promoting products that encourage the consumption of unhealthful foods (e.g., fast food, sugary beverages) and discourage physical activity (television shows, video games) according to a report issued by the Institute of Medicine (2013). 0% of the ads broadcast on children’s networks are for fruit or vegetables, while 34% of the ads are for candy and snacks (APA, n.d.-a). Such advertising has a particularly strong influence on the preferences, diets, and purchases of children, who are the targets of these marketing efforts (Institute of Medicine,

Childhood Obesity

2013). Screens are not the only culprits; children are exposed to marketing by ads on school buses, in gyms, on book covers, and in bathroom stalls. This marketing is exploitative, as children under the age of eight do not understand the persuasive intent of ads, and those under the age of six cannot even distinguish between programming and commercials (APA, 2004). Simply viewing an ad once can create a preference for a child, impacting what the child will ask his parents to purchase (Harris, Bargh, Brownell, 2009). Therefore, the media's suggestion of unhealthy habits easily infiltrates the home.

Psychological Risk Factors

Psychological factors also play a significant role in increasing the risk for childhood obesity by influencing dietary choices as well as the amount a person eats before he or she feels satisfied. Because children are dependent on their parents for providing meals, their parents' choices primarily determine their diets. One of the factors that influences a parent's meal related choices for his or her family is the level of chronic stress she or he is experiencing. Low-income parents are particularly at risk for high levels of chronic stress, due to the financial and emotional pressures of food insecurity, low-wage work, lack of access to health care, inadequate and long-distance transportation, poor housing, and neighborhood violence (Wadsworth, & Rienks, 2012). When parents feel stressed, they may buy more fast food for their children in order to save time or decrease the demands of meal arrangement (Parks, et al., 2012). In addition, people who are stressed and/or depressed are more likely to seek the quick pick-me-up derived from tasty food that is highly pleasurable and rewarding (Sinha, 2008). *The New York Times* investigated how scientists employed by fast food companies strategically "design food for irresistibility," utilizing fats, sugars, salt, and flavor additives as part of their business plans (Parker-Pope, 2009). It is

Childhood Obesity

these engineered foods that stressed parents are most likely to reach for to feed themselves and their families.

In addition, children whose parents are experiencing high levels of stress or depressed mood are more likely to develop behavioral ways of coping that include comfort behaviors. Food often provides a primary source of comfort, allowing over-eating to become a habitual maladaptive coping mechanism. Eating highly palatable foods can provide an immediate positive affective response that reduces the experience of stress and temporarily elevates mood. However, this positive emotion is short lived and the person will feel an urge to continue to eat in order to maintain the better feeling (Greeno, & Wing, 1994; Nguyen-Michel, Unger, & Spruijt-Metz, 2007). This pattern of “emotional-eating,” which significantly increases a child’s fat and calorie intake, is a clear risk factor for developing obesity.

Biological Risk Factors

Biological factors, such as activity and sleep levels, also play a role in maintaining health. Physical activity regulates weight by stimulating the metabolic, endocrine, and hormone processes of the body. Unfortunately, children have become increasingly sedentary over recent years. And, children who live in low-income urban neighborhoods have even fewer opportunities to safely exercise partly due to the fewer parks, green spaces, bike paths, and recreational facilities than are found in high-income communities, making it difficult to lead a physically active lifestyle (referenced in FRAC, 2011). This lack of physical activity is demonstrated by the fact that fewer than 20% of ethnic minority youth participate in intramural sports (Delva, Johnston, & O’Malley, 2007). In addition, crime, traffic, and unsafe playground equipment are common barriers to physical activity in

Childhood Obesity

low-income communities (FRAC, 2011). Because of these and other safety concerns, children and adults, alike, are more likely to stay indoors and engage in sedentary activities, such as watching television or playing video games.

Cultural trends have also followed a path towards the sedentary lifestyle. It has been suggested that the increase in availability of air conditioning in the summer has led to inactivity during times of the year when children typically were outside playing and getting exercise (Keith, et al., 2006). The American car culture of the Twenty First Century has also led to the replacement of active walking with driving. Twenty five percent of all US trips are less than one mile, yet seventy five percent of these trips are by car (Frumkin, 2002). As people become more accustomed to driving, they walk to locations—even those close by—less and less.

Another biological risk factor for obesity is the quality and quantity of a person's sleep. Research has shown that disrupted sleep interferes with the body's ability to effectively process fat and calories by altering hormone production (Myers, 2011). As sleep decreases, there is an increase in ghrelin in the stomach, which builds appetite and creates the "I'm hungry" feeling. Also, the protein, leptin, which creates a feeling of being full, is decreased; and, the stress-related hormone, cortisol, which leads to fat storage, is increased. A person who does not sleep well will also obviously feel tired and have less energy to exercise and accomplish his daily tasks. The negative impact of sleep deprivation on mood and stress levels is well documented in literature (see APA, n.d.-b, for a review). A vicious cycle is thereby set into motion whereby depression and stress, themselves, become causal in the disruption of sleep patterns (Meerlo, Sgoifo, & Suchecki, 2008). For example, sleep disruption serves as a risk factor for Attention Deficit Hyperactivity Disorder (Youssef, Ege,

Childhood Obesity

Angly, Strauss, & Marx, 2011), which in turn negatively affects academic performance and thus increases feelings of stress and low self-esteem. In addition, overweight children are more likely to have sleep apnea, which in turn continues to disrupt sleep and cause further weight gain (Meltzer, n.d.)

Conclusion and a Solution

The intertwined nature of the risk factors for childhood obesity may seem overwhelming and leave clinicians, researchers, and policy makers feeling hopeless about their ability to slow this epidemic. However, the biopsychosocial model of disease used by psychologists demonstrates that it is within this very interplay of biological, environmental and psychological factors that we can find cause for optimism. The biopsychosocial model suggests that by creating even a small change in a child's behavior, a well-designed intervention program has the potential to significantly reduce obesity by creating a ripple effect that will be felt throughout the system.

The following intervention strategy for reducing childhood obesity capitalizes on the already existent powerful influence of media. Television viewing in this case, however, is not seen as a risk factor but is used to beneficially persuade young audiences to make healthy choices. As a captive audience, children ages eight through twelve years experience the highest rate of ad exposure at 7,609 ads per year (APA, 2004.). This age group, as described by psychological theorists Erik Erikson and Jean Piaget, is at an ideal point in their development where they are becoming more independent and competent but have not yet formed completely fixed schemas and habits. This is the perfect age to approach children with new and appealing ideas that allow for the formation of new, empowering schemas about developing a healthy body. Before beginning the intervention, a field

Childhood Obesity

experiment would be conducted to validate the hypothesis that children ages eight through twelve years would indeed be significantly responsive.

An intervention is thus proposed that utilizes a series of five public service television commercials that feature popular actors and athletes to create a highly effective and engaging vehicle for modifying children's schemas regarding food and exercise. In the proposed commercial, popular celebrities such as Derek Jeter, China McClain from the Disney Channel show *Ant Farm*, and the animated "Minions" from *Despicable Me*, attempt to dance in a playfully unskilled and awkward manner to the catchy and familiar song "*I Like to Move It*." The celebrities dance in their own living rooms and ask children to get up off the couch and "C'mon, show us how it's done!" The song "*I Like to Move It*" was heard in the movie *Madagascar*, but the original version by Reel 2 Real (1994) has an even more rhythmic hip-hop flavor. The enthusiasm and energy of this song is infectious. Each commercial would teach children a new part of the highly aerobic dance that they would eventually be able to put together and do with their friends. The sight of admired celebrities being silly and making mistakes would encourage children to try something new and take a risk in a relaxed, pressure-free environment. This commercial could be produced with funds from the Advertising Council, a non-profit organization that produces, distributes and promotes public service announcements. In order to catch children during typical TV viewing times, the "*I Like to Move It Public Service Announcement*" could broadcast on the Disney Channel and Nickelodeon after school and in the evening. The "Move It" part of the song's title is similar to the name of Michelle Obama's Let's Move campaign and can therefore build upon an already familiar anti-obesity message. This proposed commercial

Childhood Obesity

strategically targets children's depressive mood and inactivity, both risk factors that can lead to obesity.

Before launching this public service announcement nationwide, field experiments would be conducted to validate the hypothesis that children aged eight through twelve years would increase their activity levels in response to the "*I Like to Move It*" commercial. In addition, the study would investigate whether the song is equally appealing to children of all geographical locations and of both sexes, and thus would determine the most beneficial time and television network for broadcast. Weekly surveys could be conducted at a series of local public schools. These surveys would determine if the commercials were having an impact by determining how many students saw the commercials and by asking students for their reactions and finally to demonstrate the dance.

One positive intervention can cause a chain reaction. Many of the nation's children have gotten stuck in a vicious biological, psychological, and social cycle that is steering them towards a continued future with obesity. However, psychology allows us to recognize that due to the interwoven nature of the factors causing obesity, this cycle also contains a solution.

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