

Family Environmental Characteristics Associated with Obesity in African American High School Girls

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Abstract

Adolescent obesity is prevalent in America. African American girls are at a disproportion risk for developing obesity. Family environment has been shown to be associated with obesity in African American adolescent girls. Examining the family environmental factors further reveals there association with obesity. This study is examining key environmental factors associated with obesity in that population.

This study uses secondary analysis of the baseline data from Project Heart (PH), a physical activity intervention trial at a high school with the goal of increasing physical activity levels. Two hundred twenty- one (221) girls participated. Most of them were African American (83%) and age 13-15 years. They completed questionnaires covering aspects of their family environment, and the data analysis showed the factors association with girl's obese status. Chi squared test and T-test were used to show significant differences between the two groups of obese and non obese girls in relation to their parents obesity status.

Twenty-nine percent of the girls were obese, BMI's at or over the 95 percentile specific for age and sex. 71% of the girls were not obese. 35% of those obese girls had ≥ 1 parent who is obese compared to 15% of non obese girls having ≥ 1 parent obese. The rest of the data analysis is in progress (chart and graphs in development).

The data represented girl's perception in terms of reporting parent obese status, making them inaccurate. The measures used within the data set analysis are family intimacy, family support and family physical activity. The family intimacy scale is very important environmental characteristic when predicting levels of physical activity/ non activity in the high school girls and should be continue to be used in other research. There have not been many studies with predominately African American girls. In the future, more in-depth research on the different type of environments needs to be conducted.

Problem Statement

Boyington, Carter-Edwards, Piehl, Hutson, Langdon, and McManus (2006) support the position that obesity is prevalent among adolescent high school girls. African American adolescents specifically, are at a bigger risk for developing obesity than some of their counterparts. Statistics show that African American females are more likely to be obese than White or Hispanics adolescents. This data recorded in 2001-2004 supports that fact; African American women were 70% more likely to be obese than Non-Hispanic White women (CDC, 2007). Furthermore, research notes that obesity in adolescence continues into adulthood (Freedman et al, 2005). This shows the importance of examining obesity in adolescence as a way to prevent tracking into adulthood. Many studies conducted to a degree consider the environmental aspects that contribute to obesity in that population (Boyington et al., 2008; Kimm et al., 2002; Kibbe and Offner, 2003).

Purpose of Study and Research Questions

Many factors contribute to obesity. This study however, examines the aspects of the family environment that may contribute to obesity in African American adolescents. The three variables are: (a) family environment, (b) family intimacy and (c) support for physical. The research will also further explore those aspects in relation to obesity. Given this purpose, the following main research question will guide the investigation:

1. What are the family environmental characteristics related to adolescent obesity?
2. How do family support, intimacy and support for physical activity contribute to adolescent girl obesity and non obesity?

Significance of Study

Further investigation of environmental influence may help explain why African American girls are at a disproportionate risk for obesity and the related health consequences (Boyington et al., 2008). The Project Heart study's primary focus is to evaluate the effectiveness of a life skills centered physical activity intervention for increasing over all physical activity in African American girls. The Project heart study was one of few studies that contain a mainly female minority population.

Data reflecting family characteristics that played a role in overall physical activity among African American girls such as family intimacy, support, and physical activity were collected. These factors are associated with obesity among this age group, but were not analyzed as such in the PH study. This study will include those factors.

Theoretical Framework

Researchers Davison and Birch (2001) analyzed Urie Bronfenbrenner's Ecological Systems Theory (1979) in relation to factors associated with obesity. The theory defines how complex "layers" of the environment effect child development (Bronfenbrenner, 1979). Their analysis shows the environmental factors associated with childhood/ adolescence obesity (Davison and Birch, 2001). The four systems described are the Microsystem, Mesosystem, Exosystem, and Macrosystem as Figure 1 displays. The microsystem is the most influential system because the child experience's their first contact with the environment, including interactions with parents (family), school, neighborhoods, and childcare environments. The child and those surroundings both influence each other. For example, a child's parents may affect his or her beliefs and behavior, and vice versa. This is known as the *bi-directional influence* (Davison and Birch (2001). Secondly, the microsystem and mesosystem are interrelated. In the mesosystem, family experiences are directly related to experiences outside the initial environment (microsystem). Each aspect of the system shows the connection surrounding the child's teachers, parents, neighborhood, and overall environment. Thirdly, the exosystem describes larger social systems that are not directly in contact with the child. Lastly, the macrosystem consists of cultural values, customs and laws. This system has a distance influence on development of obesity since it is the last level (Davison and Birch 2001).

In addition, the theory has been renamed "*bioecological systems theory*" to emphasize a child's own biology as a primary environment factor influencing development. Their biology in combination with the complex levels plays a role in development. The interaction between factors in the child's biology, immediate surroundings, and the broader societal landscape all influence development (Davison and Birch 2001). The framework effectively explains factors influencing child development that related to obesity. Davison and Birch conclude that the family environment is the strongest factor in the early development of obesity.

Figure 1

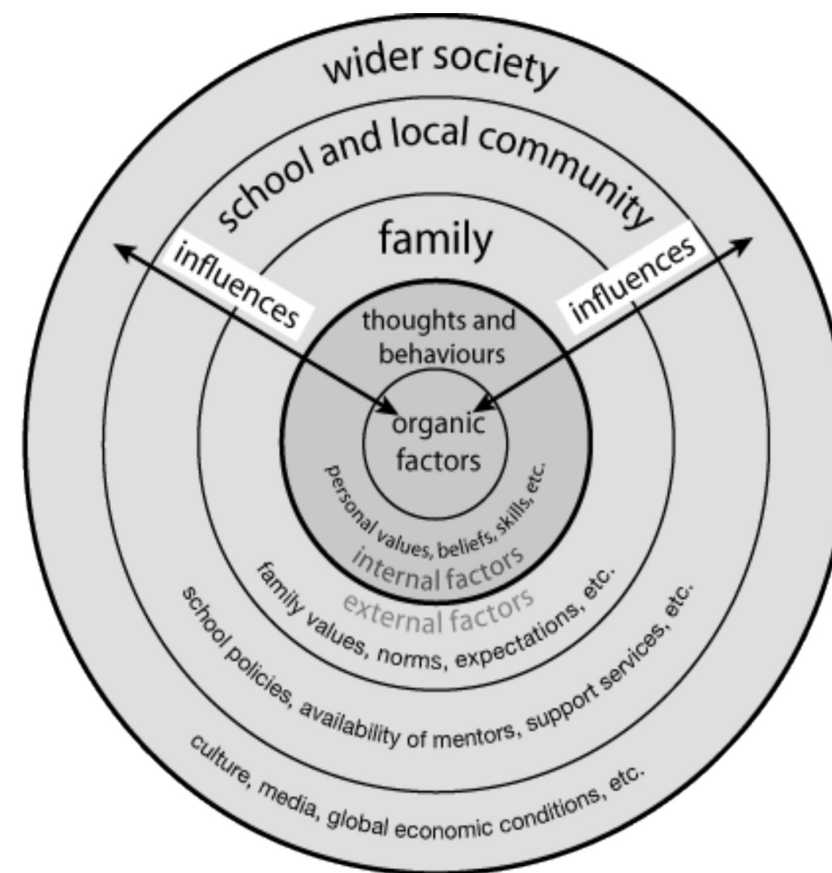


Figure 1 Displays the different environmental levels and influences on the child. First two inner rings display the microsystem- child's first environmental contact, mesosystem- immediate environment like family, exosystem- large social systems like school and community, and macrosystem- the wider society.

Limitations

My study had several limitations. The first limitation was that the data collection consisting of self report measures. These results were based the girl's perception of reporting parent's medical history, so they were not completely accurate. Some data responses are not fully completed they were excluded from the final analysis. The measures used within the data set analysis are family intimacy, family environment and family physical activity. The family intimacy scale is very important environmental characteristic when predicting levels of physical activity/non activity in the high school girls but it is not commonly well defined. In contrast, strength is there have not been many studies with predominately African American girls. This study will add to the current established literature.

Literature Review

This section will cover obesity, adolescent obesity, and adolescent obesity in girls, factors associated with obesity in adolescent girls, health consequences, parental obesity status, cultural attitudes, and the family environmental factors associated with obesity in adolescent girls.

Obesity in America

Prevalence of overweight and obesity has increased sharply for both adults and children, since the mid- seventies (CDC, 2008). The National Health and Nutrition Examination Surveys (NHANES) shows that “among adults aged 20–74 years the prevalence of obesity increased from 15.0% (in the 1976–1980 survey) to 32.9% (in the 2003–2004 survey)” (CDC, 2008). For many, adult obesity is a continuation of a condition that developed as an adolescent (Freedman et al, 2005). Since the condition continues from adolescence then the associated health risk will not only continue, but develop into more serious ones. Many overweight people develop asthma, high blood pressure, high cholesterol and the development of cardiovascular disease (CDC 2007). Not all obese adolescents develop into obese adults, but obese adolescents have a higher risk of becoming obese adults. The health consequences will be discussed more specifically later on in the review.

Health Consequences of Obesity

Some health concerns surrounding adolescent obesity are asthma, diabetes, and pre-hypertension and colon cancer. Some of these consequences occur naturally out of the environment. As mentioned before, some health risk are diabetes, cardiovascular disease, high blood pressure, and breathing difficulties or asthma (Dalton, 2004). African Americans in particular suffer an increased risk for developing the disease.

In addition, various studies have shown a relation between adolescent obesity and hypertension. This problem needs to be curbed at a young age before it progresses into a mountainous issue (Freedman et al., 2005, and Dietz, 1998). The issue is the development of high blood, pressure and diabetes as an adult (CDC, 2007). It is

imperative that the health risks are taken seriously because they have the potential for lasting a lifetime. On the contrary, it has been reported that among the studies revealing childhood obesity tracking in to adulthood, only 15% to 30% results from obesity beginning in adolescence.

Adolescent Obesity

“One out of three children in the United States is either over weight or at a serious risk of becoming so” (Dalton, 2004, p.35). The data represents a large number that will continue to increase if something does not change. The following statistics from the Center for Disease Control and Prevention support the notion that obesity starting in adolescence is likely to persist in adulthood, “Obesity is of particular concern for our children, since overweight adolescents have a 70% chance of becoming overweight or obese adults” (CDC, 2008). With that alarming fact, the health risks associated are devastating. The following are some health risks associated with obesity in adolescents: (a) Type 2 diabetes, (b) cardiovascular disease, (c) advance maturation, (d) asthma, (d) gastrointestinal and (e) psychological problems (Vargus, 2006). Vargus' discussion on the psychological health risk is important. Other researchers agree that adolescent weight gain can lead to other feelings of low self worth, and difficult peer relations (Boyington et al., 2008, Dalton, 2004, Kimm et al., 2002). Alleyne and Lapoint support that obese adolescents that are teased by their peers suffer from low self esteem and self worth (Alleyne and Lapoint, 2008). It is important to understand the social consequences associated with weight gain since it is on going concern. Additionally, adolescents classified as obese have a difficult time socializing with their peers. Some fear that their peers are laughing or mocking their size (Boyington et al., 2008, and Kimm et al, 2002). This is why it is important to understand the impact of the environmental factors having on an adolescent obesity.

Obesity in Adolescent Girls

Adolescent years create an environment favorable to weight gain. Some girls experience more weight gain than their male counterparts. A study conducted by Dietz (2004), supports that adolescence is a critical period where weight constantly fluctuates:

Adolescence represents a third critical period when overweight may occur and may increase the risks of obesity in adulthood. The risk of becoming overweight during adolescence appears to be higher among girls than among boys, perhaps because adolescence in girls is characterized by a relative increase in fatness (p.855).

This quote refers to the how girls develop compared to boys. Findings show that girls experience weight gain at a higher rate due to puberty related weight gain compared to their male counterparts. It also shows the long term consequence of adolescence obesity, which is the possible growth into adulthood obesity. Adolescent is a critical period for girls in particular because weight gain is common during puberty (Dalton, 2004). Research conducted in Kimm's study supports that a

decline in physical activity is common during adolescent years due to the expected weight gain resulting from puberty for girls (Kimm et al., 2002).

Furthermore, findings of the National Heart, Lung and Blood Institute (NHLBI) reported that in addition to African American children/adolescents being at disproportionate risk, the prevalence of obesity in black girls specifically, is one third higher (31%) in comparison to white girls (Kibbe & Offner, 2003). Clearly, African American adolescent girls are at a high risk for developing obesity. Boyington et al. (2008) and Kimm et al. (2002) provide some explanation to why African American girls are at a high risk. Young African American females are less likely to eat the recommended daily amount of fruits, vegetables, and whole grains, and are more likely to consume high amounts of fat and sodium (Boyington et al., 2008, Krebs, 2008 and Kimm et al. 2002). The study further reveals, in contrast, white adolescent girls are shown to eat more of the daily recommended amount of nutrition like the fruit, vegetables, and whole grains. One conclusion of the study is that consumption of these types of food will evidently lead to weight gain (Boyington et al., 2008, and Krebs 2008).

Factors Associated with Obesity in Adolescent Girls

There are many factors associated with obesity in adolescent girls. Some are (a) diet, (b) physical activity or inactivity, (c) genetics, (d) and Family Environmental characteristics.

Diet

Scientists have reached a consensus that obesity results from an imbalance of an individual's energy intake and energy output (Krebs et al., 2008). High energy intake coupled with low output creates an imbalance which can lead to weight gain. Having a high calorie diet and low physical activity levels is a leading cause of obesity (Krebs et al., 2008). Krebs study explained obesity in its simplest form. The amount of calories consumed by boys and girls differ. Studies show that boys eat more than girls. Various studies reveal that when compared to young white females, young African American females are less likely to eat the recommended daily amount of fruits, vegetables, and whole grains, and are more likely to consume high amounts of fat and sodium (Boyington et al., 2008 & Krebs et al., 2008).

Physical Activity

There are clear racial and ethnic differences in physical activity levels. African American adolescents have lower levels of physical activity than white and Hispanic adolescents. Statistics from the YRBS, point out that 29.5% of African American adolescents met recommended physical activity levels compared to 38.7% of whites, and 32.9% of Hispanic adolescents (CDC, 2005). The recommended level is at least thirty minutes of sweat producing physical activity. There is a clear difference across ethnicities with activity levels. African American adolescents still lag behind.

Reis (2008) study supported that all racial and ethnic groups had low physical activities however; African American females had the lowest physical activities (Reis, 2008). To maintain a healthy weight it is recommended that adolescents engage in a minimum of thirty minute of moderate to vigorous daily physical activity. Boyington supports that African American adolescent females lag behind in physical activity. This is due to a couple of reasons. Boyington study explains that a large amount of African American girls do not exercise because they do not want to sweat their hair out (Boyington et al., 2008). In the African American community it is common to value your appearance more than physical health. Many of the girls in that study honestly said, "My hair style is an equal exchanged for me not exercising" (Boyington et al., 2008, p.2) Cultural environments play a huge role in whether or not, and how often this population exercises.

Genetics

Genes determine if a person is likely to store excess energy from fat as lean muscle. A common saying is that we are fat because it "runs in our genes" (Dalton, 2004, p.46). This common thought may lead to the belief that weight gain is totally genetic. Genetics alone cannot explain obesity. Dalton suggests that environmental factors are largely associated with the development of an obesity status (Dalton, 2004, p.46). One could also say that obesity runs in the environment, like the above statement of it running in our genes.

Some scientist says that certain types of people have a genetic predisposition to become obese aside from those genetic factors. Dalton asserts children are more vulnerable than others in the obesity epidemic. A geneticist J.V. Neel identified the environment changes everyday, faster than our bodies can keep up. The body will have a hard time adapting to the changes leading to excess gain (Dalton, 2004). This environmental as a prime driver of the obesity epidemic is termed the obesogenic environment (Elinder and Jansson, 2008). Obesity had has been link to an environment that cluttered with large portions sizes. There has been a rise in unhealthy food accessibility along with long physical activity levels which are factors related to the genetic aspect of obesity (Elinder and Jansson, 2008). If the environment stays constant then so will a person weight gain or weight lost.

Even though genetics has a role in obesity it only plays a part. The environment has always had a role as this reveals, "Certain genes increase child's potential for becoming fat, and then other factors fall under the nature (environment) category trigger that genetic predisposition until he or she actually becomes overweight" (Dalton, 2004, p.47). Individuals are constantly influenced by the environment in which they live. Simply put it helps shape you and that could not be truer in the obesity epidemic.

Family Environmental Characteristics

Family environment is one of the many determining factors for the rise of obesity among African American girls. Family environments are the key factors in developing food preferences and patterns that shape children's eating habits and physical activity desires. These factors can lead to African Americans girls having healthy or unhealthy weight status (Dalton, 2004 and Kimm et al, 2002). If a family supports sedentary behavior, i.e. watching television compared to going for a walk for instance, there is no push to incorporate physical activity into their daily routine. A study (Granich, Rosenberg, Knuiman, and Timperio 2008), revealed that less supportive families can show little concern for the level of sedentary activities their children participate in. "Excessive screen based activity" or watching television, as the study reveal, has excessive consequences; one being weight gain and asthma (Granich et al, 2008, abstract). On the other hand, a family supportive of active lifestyle will help lead to an adolescent with a healthy weight.

Especially during early and middle childhood, family environments are the key influencers for the development of food preferences, patterns of food intake, eating styles, and the development of activity preferences and patterns that shape children's developing weight status.

Low Socioeconomic Status

Poverty and low education are some other risk factor associated with obesity. Individuals with a low socioeconomic status have a greater likelihood of becoming obese. Federal statistics show that, "23% of white and 34% of black earning 15,000 dollars or less is at risk for obesity" (Dalton, 2004, p.55). She further states that a low income decreases the options for consuming healthy low processed foods. The main concern of these families is to eat. The types of food eaten are of little concern. She also found that since African American families are more prone to eating low quality high fat foods, they eat the foods they want their children to eat, and less of what they should eat. Fresh fruits and vegetables snacks are snacks they want them to eat (Dalton, 2004).

The families know the foods that are better for their children to consume. Access to these foods is another issue alone. Today's society provides increase access to fast on the go food. There are literally fast food restaurants and quickie shops on every corner in urban low socioeconomic areas (Boyington et al., 2008). It is easier to access foods that are not a hassle to prepare. Certain areas don't have access to supermarkets providing fresh produce, in comparison to more wealthy areas. It is important to understand how the environment as revealed is negatively associated with obesity in African American adolescent.

Parental Obesity

A study supports that parents categorized as obese have relationships with their adolescents which lead to their development of obesity. Kosti et al., (2007) revealed that between school age children and parents there is an association between BMI's

of the parent and child (Kosti et al, 2007). This shows that if a parent is obese, [BMI ≥ 30] that the adolescent is likely to follow in their footsteps. This study suggests that parents are a strong influential factor when it comes to creating an environment that supports a certain level of health.

Boyington et al., (2008) further revealed that parents initiate the type of eating habits for their children which become the basis for life long eating patterns.

This quote explains how the parents shape the food environment early on in their child's life,

...relatively little research has assessed the extent to which parents (particularly parents who are overweight) select environments that promote overweight among their children. Parents provide food environments for their children's early experiences with food and eating. These family eating environments include parents' own eating behaviors and child-feeding practices (Birch, 2001, p 894).

The results suggest that parents are critical in shaping their child's early food experiences which can be positive or negative. Parents create the foundation for their children to follow.

Dalton explains that parents eating choices will be reflected in the child's eating habits. There are a few that Dalton discusses like permissive, authoritative, and authoritarian styles about food choices. Parents adopting an authoritarian eating style use commands or coercion to get their children to eat. On the other hand food is commonly used as a reward and punishment (Dalton, 2004). A child's favorite food is used as a reward system; restricting that same food is used as a type of punishment. The notion of "cleaning your plate" commonly aids in overeating, and eventually an overweight status (Dalton, 2004, 79). The child will eat to clean the plate disregarding any recognition of fullness they may have. This behavior is followed because this is what the parents enforced. Another example of a command is "You can not go play if you don't eat all your dinner," showing the negative view of eating created from them that parent environment (Dalton, 2004, p.79). This environment is one where overeating is subconsciously encouraged through those types of commands.

Cultural Attitudes toward Obesity

Davis, Williams, Adabrahman, Futch, Okeke, and Young's study reveals African American parent view on obesity. The parents of obese children explain their child's condition with the term big boned, explaining that his or her takes after them, or it was caused by DNA (Davis, et al., 2008). Culturally, African Americans use the term "big bone" as an acceptable explanation to their child weight status. Some parents may not know all the consequences associated, but when provided with that information the parents quickly began to change the family environment. In addition, many African American families view obesity as not a huge concern. Moreover, any families view slight weight gain as healthy (Davis et al., 2008). The

parent's perceptions need to be altered. If the parent continues to think that same ways the consequences related to obesity will never change.

Family Support for Physical Activity

Families that openly support physical activity play a huge role in whether or not; the individual develops obesity (Ries, 2008, Kuo, 2007 and Kimm et al., 2002). If there are few opportunities for physical activity combined with unhealthy eating habits like over eating, obesity is likely to occur. Research indicates that recent increases in obesity are likely to result from the interaction of biological and social factors within a physical environment. This coupled with few opportunities for physical activity along with and eating excessive amounts of high calorie foods is associated with weight (Jebb, 1999 p.341).

There has been a great deal of focus on childhood obesity. According to Dietz (2004), during this time one would think that parents would naturally be more supportive of adolescent physical activities (Deitz, 2004). If the parents and family show interest in activities their adolescents are involved in, they would have more motivation to be active. Kuo et al (2007) further revealed the level at which the family environment can act as a determinate or motivation factor in contributing to physical activity (Kuo et al., 2007). A family that is supportive of active lifestyles will create an atmosphere where an individual is more prone and eager to participant in physical activity.

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The Effects of Reality vs. Fantasy Based First-Person Shooting Video Games on Adolescent Behavior

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Abstract

This conceptual paper reviewed the literature on violent video games and aggression. Using the General Aggression Model as a framework, this study provides evidence to support the relationship between video game violence and aggressiveness. To address the lack of research on first-person shooter (FPS) video games found in the literature, a future study will be proposed observing different types of first-person shooter video games (reality and fantasy) and the effects they may have on adolescent behavior. Consistent with the General Aggression Model, findings showed increases in aggression for adolescents exposed to violent video games. While research shows first-person shooter video games increase adolescent aggressiveness, evidence on different types of first-person shooter games and their effects on adolescent behavior were inconclusive. However, research reported by Potter (1988) showed that viewers tend to experience more emotional and behavioral issues when viewing reality based media. In addition, Anderson and Bushman (2002) reported that empirical evidence shows that violent video games and aggressiveness have a positive and significant relationship. The grouping of Anderson and Bushman (2002) and Potter (1988), provide evidence that adolescent aggressiveness will be higher when playing reality based first-person shooter games in comparison to fantasy based first-person shooter video games.

Introduction

The effects of violent video games have become an extremely controversial topic in the world of media. Research by Children Now (2001) found that 89% of video games contain some violent content and that about half include violence toward other characters that would result in serious injury or death. In addition, research has shown that adolescents prefer playing video games that have violent content (Buchman & Funk, 1996). Empirical evidence has been found that violent video game exposure increases aggressive thoughts, cognitions, and behaviors (Anderson, Berkowitz, Donnerstein, Huesmann, Johnson, Linz, Malamuth, & Wartella, 2003). Although there is empirical evidence that supports this relationship, research on specific genres of video games like first-person shooter and the effects they have on adolescent behavior has not been found.