

Determinants of Obesity

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Literature Review Paper

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The obesity epidemic in the United States affecting both adolescent and adult populations is one of public health's most pressing concerns because of its widespread impact across the entire US population. In 2017 to 2018, the prevalence of obesity in the adult population of the United States was 42.4%, whereas the adolescent population made up 18.5% of cases (CDC, 2020). The focus of this review will be on different determinants of obesity. We will discuss community demographics, gender, income, education levels, and inequitable access to exercise and quality foods as it pertains to its role in obesity. This will give the background needed to explain how certain populations are more susceptible to the disease.

Ethnicity is a significant determinant of obesity. The prevalence of obesity in a population is impacted by an individual's ethnicity and the overall composition of their community, such as adequate access to healthy food options and safe spaces for outdoor activities. The following research explores non-Hispanic Black, non-Hispanic Asian, Hispanic and non-Hispanic White ethnicities at both the individual level and community level.

Communities whose population comprised of >25% of Non-Hispanic Black and Hispanic people showed a higher prevalence of obesity (31.94%, 28.76% respectively) in contrast to communities with a population of >25% of Asians, whose prevalence of obesity was markedly lower (15.82%). Statistics illustrate a similarity in obesity rates among minorities such as Non-Hispanic Blacks and Hispanics living within their respective communities. Non-Hispanic Blacks residing in predominantly Black neighborhoods had an obesity prevalence of 36.62%. Likewise, Hispanic individuals living in Hispanic communities presented with an obesity rate of 30.53% (Kirby et al., 2012).

The studies conducted show that even when Non-Hispanic Blacks and Hispanic individuals resided within an Asian community, whose overall obesity levels (inclusive of all ethnicities) were predominantly low (15.82%), these two racial groups reflected a higher proportion of the population within that community with an obesity rate of 38.3% and 26.9%, respectively. This finding is crucial as this may reflect a cultural bias to different forms of acceptable body images based on ethnicity—however this in itself is a weakness of the research explored. The authors stress that “...there could be unmeasured individual or environmental characteristics that account for the patterns of obesity observed across community racial/ethnic composition” (Kirby et al., 2012). Nonetheless, it still reveals the presence of ethnicity as a relevant indicator of obesity regarding the current context of the obesity epidemic in the United States (Kirby et al., 2012).

Among the different ethnicities (non-Hispanic White, non-Hispanic Black, non-Hispanic Asian, and Hispanic) the level of income and education proved to be essential determinants of the likelihood of becoming obese. Although women tend to display an inverse relationship between those determinants to the overall percentage of the population affected by obesity, men resembled a more complex trend in their relationship with obesity (CDC, 2017). However, for simplification, this section will focus primarily on combined male and female statistics which observes an inverse relationship between the determinants and the prevalence of obesity.

In the aforementioned research, a greater percentage of individuals who identified as Black or Hispanic were living below the poverty line (19.61%, 16.85%, respectively) in comparison to non-Hispanic White or non-Hispanic Asians (7.47%, 8.30%, respectively); which

highlighted the increased likelihood of living in an impoverished neighborhood as a non-Hispanic Black or Hispanic individual. This trend revealed to be closely related to the individual's level of education as a higher rate of non-Hispanic Black and Hispanic individuals had less than 12 years of education (24.31%, 44.22%, respectively) with an increasingly negative trend with less people from these ethnicities going into graduate level education. These statistics are vital when viewed in terms of racial/ethnic composition at the community and individual-level, since non-Hispanic Black and Hispanic populations tend to be impacted greatly by obesity, as previously expressed. Although these issues may not be direct causes of obesity, they present as possible risk factors for acquiring obesity as this may result in a poorer lifestyle and activity level (Kirby et al., 2012).

Similarly, the CDC focuses on three income brackets in contrast to a single "below poverty" bracket. The levels of household income were based on the Federal Poverty Line from <130% FPL (low income), between 130% to 350% FPL (middle income), and >350% FPL(highest). Accounting for both sexes across all ethnicities mentioned, the prevalence of obesity was the lowest for the highest income group (31.2%). For the middle- and low-income groups, the prevalence of obesity changed significantly (40.8% and 39.0%, respectively) indicating the role that income may play regarding obesity in the population (CDC, 2017).

This may be more revealing when attempting to determine why lower income populations are more susceptible to obesity. In a study conducted with African American individuals from the Fair Fax community in Dallas, Texas, whose population was largely unemployed and predominantly low-income, longer periods of sedentary living were associated

with higher rates of obesity. Methodology involved tracking time spent using a computer and also driving a motor vehicle and determining likelihood through a statistical linear regression such that an odds ratio greater than 1 had a higher likelihood of becoming obese. In both cases, individuals who spent more time than the study's established median illustrated an increased likelihood of obesity (1.56 OR, 1.68 OR) (Shuval et al., 2013).

This also correlates with lower levels of education being a greater indicator of unemployment and low income (BLS, 2019). Men and women who graduate with a college degree have a lower prevalence of obesity (27.8%) in comparison to those who graduate with a high school degree or lower form of education (40.0%) (CDC, 2017). The same population being studied in Fair Fax was impacted by being a low-income neighborhood, resulting in a greater length of sedentariness. Level of education thus becomes an important indicator of obesity when viewed in terms of sedentariness with low attainment of education being an indicator of unemployment, and therefore a higher likelihood of long sedentariness as shown by the study.

These findings reveal two pertinent conclusions—firstly, for lower-income communities whose employment rates may be statistically lower than other income groups, the inability to simply be active in a job setting would result in a greater probability of becoming obese. Secondly, higher-income communities with higher rates of employment and active lifestyles would markedly lower the occurrence of obesity within that income group. Thus, lower levels of education and lower income brackets become associated with higher rates of obesity in comparison to individuals with higher levels of education and higher income brackets. Therefore, the level of educational attainment and income, become significant indicators of obesity.

Unsafe living conditions also play a major role towards the susceptibility one has in regard to becoming obese and it typically affects the entire family. The author Chang mentions that “children from low-income families are more likely to have less opportunity for participation in physical activity because of factors such as unsafe streets or limited access to playgrounds” this lack of physical activity eventually leads to obesity especially when combined with poor eating habits (Chang, 2017).

A study conducted reported that “adult interactions and encouragement of physical activity have influenced young children’s behaviors of physical activity. **Furthermore**, children stated that mothers were not normally involved in the play of their preschool-aged children and mothers have preferred sedentary and quiet activities such as watching television or playing video games. **Furthermore**, lack of access to safe and appropriate spaces to do outdoor plays, unsafe neighborhoods and no organized affordable physical activity programs were identified as the barriers to physical activity for young children” (Lindsay et al., 2006). Parents are expected to contribute to their child's health by understanding their role in the child’s dietary habits, physical activity and sedentary behaviors. Unfortunately, many people who live in these areas are doing their best to provide for their children, which means working too many hours to be home and cooking whatever is cheapest and available. They rarely have time to go out themselves and exercise, let alone time to lecture their kids about doing so. Even if they teach their kids to go and exercise, where is it safe for them to go? Conclusively, studies found that the lack of social support for physical activity, parents’ needs (i.e., work), patterns of life (i.e., sedentary or active lifestyle), the safety of neighborhood and seasonal factors such as cold or hot weather emerged as factors influencing physical activities (Chang, 2017).

Lack of equitable access to both healthy foods and safe places to exercise is a significant determinant of obesity, especially amongst low-income Americans. “Access to foods that support healthy eating patterns contributes to an individual’s health throughout his or her life. Healthy eating habits include controlling calories, eating a variety of foods and beverages from all of the food groups, and limiting intake of saturated and trans fats, added sugars, and sodium. Healthy eating can help lower the risk for chronic disease” (Office of Disease Prevention and Health Promotion, 2020). Many affordable foods such as fast foods are filled with trans fats, added sugars, and sodium.

“Processed food is inexpensive, filling and widely available. So, while low-income Americans typically can get something to eat, they may not get enough nutrients from fresh fruits, vegetables and other foods they need to remain healthy. That lack of nutrients can often lead to chronic disease, an overlooked byproduct of hunger and food insecurity in America” (Partnership to Fight Chronic Disease, n.d). Although it may seem easier expense wise, for low income Americans to eat, the quality of what they have available is subpar. “ With obesity rates on the rise, and the accumulation of research demonstrating food’s direct correlation to cancer occurrences, diabetes, and heart disease, there has been a push to solve our country’s problems of poor nutrition. The central source of this problem can be traced to the capitalistic ideology of our current food system that fixes on profit over people” (Prendergast). Unfortunately, the food industry tends to care more about their profits, however unhealthy “cheaper” food carries a great risk to the individuals consuming it.

Research has found that, “people who live off of food stamps and in food insecurity also have the highest rates of obesity and diabetes” (Drewnowski, 2004). Can people really be led to believe that the many Americans using food stamps have no desire for whole grains, fresh fruits and vegetables? It is far more likely that those products are not available in low income neighborhoods and that food stamps can not readily cover the expense in the abundance that it can provide other less healthy alternatives.

Low-income neighborhoods have become more susceptible to obesity due to a lack of access to healthy food options from supermarkets, and high-exposure to fast-food restaurants. The low availability of healthy food in low income neighborhoods has been correlated to greater health risks in individuals residing in these areas. This issue has been well documented in research studies such “*Neighborhood Impact on Healthy Food Availability and Pricing in Food Stores*”, “*Access to nutritious food, socioeconomic individualism and public health ethics in the USA: a common good approach*”, and “*A Systematic Review of Food Deserts*”. The first study conducted by Krukowski et al. discusses how the availability of healthy foods and food stores are scarce in low income areas. This results in community members having an increased susceptibility to preventable diseases such as “obesity, cardiovascular disease, and cancer” (Krukowski et al., 2010). Although at times these nutritious foods are obtainable, they can be extremely expensive, thereby hindering consumers from being able to purchase these foods. The article goes on to attribute the lack of healthy food options in lower income communities to the limited large markets in these regions stating that “A key factor in healthy food availability may be the accessibility of supermarkets as compared to smaller grocery and convenience stores” (Krukowski et al., 2010).

Oftentimes in low-income neighborhoods, there tends to be a lack of adequate accessibility to supermarkets that offer healthy foods at a low cost. Which causes an increased dependency among these residents, on smaller convenience stores that offer low quality nourishment. This notion connects to the study “A Systematic Review of Food Deserts” conducted by Beaulac, Kristjansson and Cummins, which expresses the belief that “less access to supermarkets and chain stores in low-income neighborhoods may create barriers to accessing healthy low-cost food for those who lack access to transportation” (Beaulac et al., 2009). These authors also emphasized that transportation barriers result in a higher level of food purchases from privately owned convenience stores that have a “poor selection of healthy foods and a wide selection of unhealthy foods, which can contribute to poor diet”. Whereas individuals with an increased access to supermarkets were said to be “associated with lower prevalence of overweight and obesity” (Beaulac et al., 2009).

The limitations set on those living within low-income communities have weighed heavily on the overall health of these citizens. The study “Access to nutritious food, socioeconomic individualism and public health ethics in the USA: a common good approach”, discusses the importance of proper nourishment in the overall “growth, development, health and well-being of individuals in all stages of life” (Azétsop & Joy, 2013). The authors Azétsop and Joy, highlight that we must recognize how the lack of adequate accessibility to healthy food options as well as food insecurity leads to massive health adverse effects in the lives of many individuals. It unfortunately forces millions of people to turn towards unhealthy options to sustain themselves, which ultimately leads to obesity.

Exploring determinants of obesity allows us to explore the finer details of understanding the rise of the obesity epidemic in the United States. Exploring the prevalence of obesity in different ethnic communities illustrated the susceptibility of non-Hispanic Black and Hispanic communities to obesity, especially in the context of the greater likelihood of individuals from those communities having a lower income and level of education. Equitable access to safe areas to exercise is fundamental for decreasing the prevalence of obesity, especially among younger populations. Lastly, lower-income communities have become more susceptible to obesity as a result of inadequate access to supermarkets. This information will allow for future research on how to best tackle the growing prevalence of obesity, by providing context relevant to why certain low-income populations are especially impacted by this disease.

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