

SOCIOECONOMIC STATUS AND CHILDHOOD OBESITY

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ABSTRACT

Obesity in children is recognized as an ongoing public health issue. Childhood Obesity also correlates with other health complications, such as increased risk for high blood pressure, high cholesterol, diabetes, orthopedic issues, sleep apnea and fatty liver). Causes of obesity are complex with many contributing social factors. Obese children suffer from higher rates of poor self-image, low self-esteem, social discrimination, as well as have an increased risk for social isolation and depression

Evidence suggests that medical and psychological conditions acquired during childhood can progress throughout adulthood. The Socio-Economic Status (SES) and the development of childhood obesity should be prioritized as high concern. This research paper provides recommended solutions such as, governmental mandates and policies to promote education and awareness for social economic contributing factors towards childhood obesity that will increase improvements for unfavorable diseases/conditions.

Keywords: Obesity, health inequity, public health, socio-economic status, policy

Introduction

Childhood obesity is an ongoing public health issue that our nation is facing as a whole. Currently, 69% of US citizens are overweight and 35% are obese, many of which are children (Mandviwala, Khalid & Deswal, 2016). Obesity is defined as having a Body Mass Index (BMI) of 30, or over and 30% or higher bodyfat percentage (Pulgaron, 2013). Causes of obesity are complex with many contributing factors. Obesity is related to other health complications for children, such as increased risk for high blood pressure, high cholesterol, diabetes, orthopedic issues, sleep apnea and fatty liver (Pulgaron, 2013). Additionally, obese children suffer from higher rates of poor self-image, low self-esteem, social discrimination, as well as have an increased risk for social isolation and depression (Pulgaron, 2013).

Evidence suggests that medical and psychological conditions acquired during childhood progresses throughout adulthood (Pulgaron, 2013). History of obesity, heredity, environment, metabolism, individual behavior, cultural background and socioeconomic status, all contribute to the development of childhood obesity (Pulgaron, 2013). Ethnic minorities, which are commonly of low socioeconomic status (SES), are also at an increased risk for obesity (Pulgaron, 2013). Going beyond the general issue of increasing rates of childhood obesity, the relationship between SES and development of childhood obesity should also be taken into consideration.

Although SES is one of the major contributing factors obesity in childhood, efforts towards awareness and education of these populations and mandates using governmental policies, can substantially reduce the associated disease burden

Rationale

Attention towards such issue is important as it not only impacts the obese child, but also their family, future, population health and healthcare delivery. It is estimated that childhood rates of obesity and health care costs will double by 2030 (Wang, Beydoun, Liang, Caballero, & Kumanyika, 2008). This increase is estimated to be 16-18% of total healthcare costs (Wang et al., 2013). Aggressive measures need to be taken to ensure the physical, psychological, health and well-being of America's youth. Rates of childhood obesity continue to rise, which further reinforces the need of determining causality, and effective and practical preventative measures (Pulgaron, 2013). Immediate actions need to be taken to impede and reverse this epidemic.

Literature Review

When analyzing the special population at risk for childhood obesity, it is essential to consider the prevalence of exposures such as the socioeconomic status (SES), as it relates to ethnicity/race, education, income and social behaviors.

In previous studies, researchers have investigated the prevalence of obesity and the association with socioeconomic status (SES) and risk factors including, diet; physical activity: exercise, sports, sleeping habit in afternoon; eating habits: junk food, chocolate; family history of diabetes and obesity (Goyal, RK, et al, 2010). Evidence indicates that there are higher rates of overweight children, both boys and girls, of middle SES when

compared to high SES (Goyal, RK, et al, 2010). . Family history of diabetes and obesity were also found to be positively associated with childhood obesity (Goyal, RK, et al, 2010). Adjusted obesity prevalence also varied by age, gender, and race/ethnicity. Compared with affluent white children, the probability of obesity ranked higher for the poor Hispanic, white, and black children, respectively (Goyal, RK, et al, 2010).

Data from the National Health and Nutrition Examination Survey reported that low income children and adolescents are more likely to be obese than their higher income counterparts, but this relationship is not consistent across ethnicity and race (Ogden, et al, 2010). Also, children and adolescents living in households where the primary caregiver has a college degree are less likely to be obese compared with those living in households where the primary caregiver has less education (Ogden, et al, 2010).

Contributing economic factors that lead to childhood obesity include food prices, income, technology, and patents (Crawley, 2010). The net price of food has declined tremendously in recent decades (Lakdawalla D, Philipson T., 2002). Researchers indicate that reductions in the price of food account for 41%–43% of the rise in young adults' BMI between 1981 and 1994 (Lakdawalla D, Philipson T., 2002).

In addition, higher income could prevent weight gain by enabling consumers to substitute healthier, costlier food, or by increasing demand for good health or an attractive appearance (Philipson T., 2001). Conversely, additional income could promote weight gain by allowing people to consume more calories and spend more time in sedentary pursuits (Philipson T., 2001).

Another economic explanation for the rise in obesity are due to the changes in technology (Crawley, 2010). A technological revolution in mass preparation and preservation of food has made it easier for Americans to eat more in less time (Crawley, 2010). Some researchers suspect that people are becoming more willing to exchange their future health for immediate gratification (Crawley, 2010).

Childhood obesity has a long history, dating back over 30 years, and its prevalence has steadily increased since then (“Childhood Obesity Facts”, 2015). Over the past two decades, the childhood obesity prevalence has doubled, and adult obesity prevalence has quadrupled (“Childhood Obesity Facts”, 2015). With this rise in obesity, as children transition to adulthood, they have increased rate of obesity and concomitant comorbidities (Ebbeling, Pawlak, & Ludwig, 2002). Overweight and obesity have been shown to be associated with the increased risks of myeloma, cancers, and Hodgkin’s lymphoma

(“Childhood Obesity Facts”, 2015). In many cases obesity is preventable, hence an issue worthy and of importance to address.

Various health interventions aimed to reduce childhood obesity rates are continuously in effect. For example, the U.S. Department of Agriculture has imposed various regulations on food packaging within the Special Supplemental Nutritional Program also known as WIC (Ogden, 2014). In addition, national initiatives led by First Lady, Michelle Obama titled, “Let’s Move” is aimed to improve awareness and engagement of schools, parents and children (“CDC”, 2013). Serving in benefit of this national problem, government involvement is highly supportive in the movement of decreasing childhood obesity rates on a national level.

Methods

This literature review includes peer reviewed studies related to obesity, comorbidities of obesity, childhood obesity, socioeconomic status, and ethnicity related to obesity. All relevant studies were included up to 2016. The annual Report from the State of Obesity (2016) was referenced for up to date descriptions of obesity trends (Segal, Rayburn, Martin, 2016). State of Obesity Report compares data from the Behavioral Risk Factor Surveillance System and contains multiple data sets from various institutions like Supplemental Nutrition Program for Women, Children and Infants Participant and Program Characteristics (WIC PC) that has data on low-income 2-5 year old’s and their mothers; National Health and Nutrition Evaluation Survey (NHANES) that examined obesity in 2-19 years old biannually; and National Survey of Children’s Health (NSCH) that researched 10-17 year old’s. A report from, The State of Obesity 2016 included data for 2-4, 2-12- and 2-19-years old children. Henceforth, childhood in this report will refer to age ranges 2-19 years. Data sets were categorized by race/ethnicity, gender, income and by state. A regression analysis was conducted to identify relationships between socioeconomic status, obesity and childhood obesity.

Discussion

Given there is an evident relationship between SES and the development of childhood obesity, the following policy recommendations are proposed:

- 1. Mandate measurement of BMI/waist-to-hip ratio in all schools**

It is proposed that legislation mandates the measurement of BMI and weight-to-hip ratio of children in all public U.S. schools. Within this recommendation, children grades

K-12 will be measured as part of an annual health/wellness screening initiative. This is an expansion of an existing Texas Health Steps program that requires children under Medicaid to receive BMI measurements and resources if classified as obese. Through analyzed data, the children will be classified as at risk or overweight/obese. The BMI and waist -to-hip ratio in association with the age of the child, are accurate measurements of body fat. (Gallagher et al., 1996). Measurements are easy to conduct, and BMI data adds value to the results of the child's health. Furthermore, the data can be used to identify trends and prevalence of obesity in the community. School authorities should inform parents about their child's confidential health results and provide resources and recommendations that are specific to the community in which the child lives. During counseling, the individuals will be offered lifestyle and dietary changes and education regarding protective factors and associated risks. The goal is to help parents become more involved in their children's health care, so that they can better understand and support their children's health.

According to the 2014 statistics, 23% of the population are children below the age of 18 years (Total Population, 2016) and 68% of all national school enrollment children are in public schools ("NCES", 2015). According to another report by the Southern Education Foundation, 51% of children enrolled in national public schools are identified as low income students (A New Majority, 2015). Evidence indicates that targeting public schools will encompass the majority of low income children that are, or have a risk of developing childhood obesity.

The pros of this policy includes its ability to increase parental awareness through parental education and direct communication. It also identifies the at risk population accurately, and actively involves the participation of the school system and community members. Some limitations of this policy relates to the fact that this policy only provides information to the parents and counseling privileges. Therefore, parental action based on the results can not be controlled. Furthermore, the act of conducting a health screening on every student will require time and labor which requires financial considerations.

2. Expand Physical Education Program and Wellness Programs

Another proposed health policy would be to mandate physical and health education in schools and incorporate wellness coaching and counselling. Schools are expected to employ credentialed physical and health educators. By incorporating more health and physical education in curriculums, healthy behaviors can be ingrained into everyday life,

which can contribute to a reduced risk of obesity. The increased physical activity can improve health markers as well as overall quality of life. Additionally, physical activity can increase student cognitive ability and subsequently academic performance (“NCSL”, 2014). The designated wellness coach would oversee the availability of healthy foods in the school and monitor the physical health of all the students. The wellness coach would work with the school nurse, the physical education instructors and food handlers to collectively monitor and maintain healthy standards.

This program also includes BMI measurements and identifies the children who might need special attention in terms of exercise and diet. The information is then communicated to the parents and guide them towards suitable resources. These resources include information to community health centers, nearby grocers, co-ops and healthier recipes of commonly eaten foods.

As of 2013, physical activity has been incorporated into the curriculum of schools in North Carolina, South Carolina, Ohio, Illinois, and Arkansas (“NCSL”, 2014). This policy change did not have a meaningful impact indicating that physical activity alone is not sufficient to address obesity in children. In order to accomplish substantial change, a more comprehensive strategy and greater acceptance by all states are required. Limitations to this policy include increased cost to employ educators and nurses and modifying the curriculum. The recommended amount of age appropriate exercise is approximately 60 minutes and can interfere with the current curriculum design.

3. Expansion of Insurance Coverage for Obesity Prevention:

Incorporating the expansion for insurance coverage relation to obesity prevention is another proposed recommendation. It is proposed to require private and public insurance companies like Medicaid and CHIP to provide and strengthen coverage related to obesity prevention. This recommendation targets at risk low SES families, as it involves those who qualify for Medicaid and CHIP.

This recommendation relates back to the relationship between one’s coverage, health care providers, and the care one receives. The ability to pay for services is often directly related to access of care and treatment. With the provision of obesity preventative care, families are more likely to utilize such care. In addition, this recommendation can lead way to integrating incentives that encourage healthy behavior and use of care for

families under Medicaid and CHIP. On a provider side, insurance companies can provide for reimbursements that may motivate providers to get involved in this movement.

Currently, government agencies have the authority to enforce private health insurance to provide plans that include preventing childhood obesity in a cost-effective manner (Cawley, 2010). Some cons of this proposal relate to the matter that medicaid expansion is not equal across the United States, as it differs among states. Also, the reimbursement rates provided by private insurers may be low and not provide enough incentives for providers to get involved.

Fortunately, this method encourages health behavior and targets at risk populations (i.e. Medicaid/CHIP families and children). Furthermore, Medicaid and CHIP can improve access to health care services that support healthy weight. For example, the Early and Periodic Screening, Diagnostic and Treatment benefit within Medicaid covers childhood obesity related services (“Reducing Obesity”, n.d.).

This method can be expanded in many ways that can benefit the issue of reducing childhood obesity, especially by utilizing the provisions mandated under the ACA to further influence such impact. Programs like Texas Health Steps can be leveraged where children under Medicaid to receive a BMI measurement, nutritional counseling and guidance during wellness visits (“Medicaid Childhood Obesity”, 2009). These programs can be expanded to all states in order to create a systemized approach to reduce childhood obesity.

4. Incorporate a “Junk Tax”:

The purpose of the junk tax is to increase tax for unhealthy food and snack items, such as sodas, candy, fried foods, and decrease the tax for healthier options. The objective of the junk tax is to motivate students to make healthy nutritional choices. Researchers have concluded, the youth behaviors are influenced by altering food prices (Crawley, 2010). In previous experiments, by reducing the prices of fruit, salad, and carrots in high school cafeterias resulted in a 50% increase in sales for healthier snacks and food. One study indicated a quadrupling of sales for fruit and a doubling of sales of baby carrots (Crawley, 2010). Other experiments with vending machines in high schools found that the quantity and type of snacks purchased were significantly affected by price (Crawley, 2010). A limitation found in these studies is that they do not track consumption in all places at all times (Crawley, 2010). Additionally, the U.S. Department of Agriculture’s Smart Snacks in School has raised the standards for nutritional meals provided to students

by incorporating practical, evidence-based nutrition standards for snacks and beverages sold in vending machines, school stores, snack carts, and in-school fundraising (Cohen, E , et al. 2013) Hence, promoting healthier options while kids are in school and aid in the development of lifelong healthy eating habits (Cohen, E , et al. 2013). The regulation limits the amount of fat, salt and sugar sold in vending machines and snack bars. For example, School foods must contain at least 50% whole grains or have a fruit, vegetable, dairy or protein as the first ingredient (Cohen, E , et al. 2013). Sports drinks that contain relatively high amount of sugar are prohibited, but low-calorie versions will be available. Foods containing at least ¼ cup of fruit and/or vegetables will also be allowed. Low-fat and fat-free milk, 100% fruit and vegetable juice, and calorie-free flavored drinks are also acceptable. Where meals are given, safe drinking water must be made available to children for free. (Cohen, E , et al. 2013).

A challenge for food taxes is defining the health criteria of what should be taxed and what should be subsidized (Crawley, 2010). For instance, should apple juice be taxed because it contains a lot of sugar, or should it be subsidized because it contains added vitamins? (Crawley, 2010). Another challenge is that food taxes can be regressive, heavily affecting the poor. Several states that tax food, including Hawaii, Idaho, Kansas, South Dakota, and Wyoming, both tax food and provided an income tax credit or rebate to low-income households that compensates them for the loss of their purchasing power (Crawley, 2010). Overall, we're hoping to persuade kids to eat better meals by lowering pricing and charging energy-dense foods.

In conclusion, the U.S. is making progress and must continue its current efforts to decrease the rate of childhood obesity. The mandate of school health screenings recommendation can serve as the foundation for future advancements towards decreasing rates of childhood obesity in communities of low socioeconomic status. Implementing health policies in schools allow for direct involvement of various parties including children, parents, and the school system. In addition, the *Triple Aim* approach is taken into effect by providing the following:

- **Access:** to previously unavailable information on child's health
- **Quality:** by engaging schools in efforts to improve the quality
- **Cost:** by the screening occurring early on, this is an investment for both the child, and health care system with hopes decreasing utilization and costs in relation to obesity.

As we continue to move towards addressing population health, which includes concepts of SES, it is essential that health policies regarding childhood obesity be targeted to benefit the community and correlate with the trends of the chronic disease.

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