

The Relation Between Childhood Obesity and Socioeconomic Status - A Literature Review

Is socioeconomic status a predictor of childhood obesity?

Abstract

Objective: To assess the relationship between socio-economic status (SES) and childhood obesity in Canada and the United States.

Background: Childhood obesity is a multi-dimensional health problem that comprises biological, physical, and socio-economical risk factors. Due to the increasing prevalence of obesity in many countries, along with increasing social inequalities, continual studying of socio-economic patterns of childhood obesity is needed. Despite the vast amount of information about childhood obesity, more research is needed to examine the relationship that exists between SES and childhood obesity.

Methods: Literature review using the following databases: PubMed, Scopus and Science Direct; including only English articles published after the year of 2002 regarding childhood obesity.

Results: Childhood obesity is negatively related to SES, with significant increases in the risk and provenance of obesity as socioeconomic status decreases ($p < 0.05$). However, this relationship varies by gender, age and ethnicity.

Conclusion: The current literature shows that obesity is related to SES, however, the association is not consistent and varies by gender, age and ethnicity. Further research is needed to examine this relationship.

Research Question

How does socioeconomic status relate to childhood obesity?

Introduction

Child obesity is becoming a major problem in Canada and many other countries. According to Statistics Canada, at least 25% of Canadians between the ages of 2-17 years old are overweight due to the consumption of unhealthy food choices and lack of physical activities (Shields, 2006). Moreover, obesity in children has become one of the main predictors for obesity in adulthood, resulting in both physical and psychological problems. These psychological problems can include low self-esteem and depression and could eventually lead to the usage of drugs and alcohol. The physical problems are associated with elevated blood pressure, dyslipidemia and a higher prevalence of factors associated with insulin resistance and type 2 diabetes (Freedman et al., 2001).

In addition to health complication, childhood obesity is linked to enormous costs to the health care systems, and it further prompts appropriate preventative measures to be taken.

Over the past three decades, numerous studies published in different countries suggest that SES is one of the factors that affect people's risk of developing obesity, both in adults and children (McLean, 2007). Overall, the current literature analysis should be performed to check for the validity of this relationship across all population groups.

Methodology

- A literature review was done using the scientific database PubMed, Sciences Direct and Scopus; using key words: Child Obesity socioeconomic status, household income and parental education.
- The inclusion criteria were English articles published from the years 2000 to 2013.
- The exclusion criteria were studies that looked at adult obesity or used statistics from countries other than Canada and the United States. As well as articles that focused on the risk factors of obesity.
- Approximately 70 articles were found prior to applying inclusion/exclusion criteria. After inclusion/exclusion criteria were applied, 8 articles were determined to be valid for this literature review.

Results

Odds of Overweight (BMI > 85th Percentile) among U.S. children aged 10-17 years old, 2007

Highest Parental Education Level Years	Odds Ratio	95% CI	
<12	3.17	2.52	4
12	2.17	1.88	2.5
13-15	1.78	1.56	2.06
16+	1	reference	

Household Poverty Status (Ratio of Family Income to Poverty Threshold)	Odds Ratio	95% CI	
Below 100%	2.87	2.43	3.39
100-199%	2.17	1.85	2.54
200-399%	1.51	1.31	1.75
At or above 400%	1	reference	

Odds of Obesity (BMI > 95th Percentile) among U.S. children aged 10-17 years old, 2007

Highest Parental Education Level Years	Odds Ratio	95% CI	
<12	4.25	3.24	5.58
12	2.54	2.13	3.03
13-15	2.05	1.72	2.45
16+	1	reference	

Household Poverty Status (Ratio of Family Income to Poverty Threshold)	Odds Ratio	95% CI	
Below 100%	3.43	2.73	4.3
100-199%	2.48	1.99	3.9
200-399%	1.52	1.32	1.87
At or above 400%	1	reference	

Table 1: Odds ratio of becoming obese or overweight based on different levels of SES. The relationship seen is that as SES decreases the odds for becoming obese or overweight increase. All results are statistically significant with $p < 0.05$ (Singh, Siahpush & Kogan, 2010).

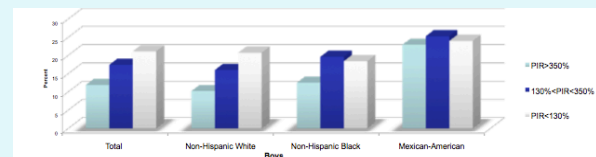


Figure 1. Prevalence of obesity among boys aged 2-19 years, by poverty income ratio, sex, gender and ethnicity: United States, 2005-2008 (Cynthia, Molly & Margaret, 2010)

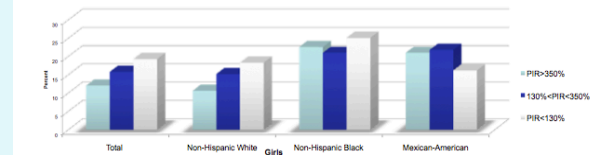


Figure 2. Prevalence of obesity among girls aged 2-19 years, by poverty income ratio, sex, gender and ethnicity: United States, 2005-2008 (Cynthia, Molly & Margaret, 2010)

In general, among both boys and girls obesity prevalence decreases as income increases, but this relation is not consistent across race and ethnicity.

Discussion/Limitation

- The relationship observed in most literature demonstrates that as SES decreases, the risk of becoming overweight or obese increases (See Table 1).
- This may be due to the fact that those with lower SES have less opportunity to partake in physical activity and have limited access to nutrient-rich food. (Johnston, Delva & O'Malley, 2007)
- However, the casual relationship between SES and obesity is more complex than that. Despite the overall high prevalence of childhood overweight and obesity around the world, large variation exist across population groups within countries.
- As shown in Figure 1 and 2, the relationship between SES and childhood obesity in the United States varies between different gender and ethnicity (Cynthia, Molly & Margaret, 2010).
- It also varies by environment factors, and is bidirectional; obesity can negatively affect people's SES by limiting educational and employment opportunities. (Wang and Hyunjung, 2012).
- What is definite across different studies is that: SES may affect lifestyle, including a population's access to food and patterns of physical activity and as a result, influence their energy balance and lead to obesity (Wang & Hunjung, 2012).
- Due to lack of comparable data from different studies, some inconsistency is observed:
- Failure to have a standard measurement for SES makes it difficult to compare findings.
- Some studies have used different criteria to define obesity, which makes it more complex to generalize these finding with strong external validity. Further research is needed to help better understand the many controversies regarding the relationship between SES and obesity.

Conclusion

When examining the population as a whole, the relationship seen is that as socioeconomic status decreases, the prevalence and risk of obesity increases. However this relationship is not consistent through all sub population, specifically when examining different genders and ethnicity groups. The relationship between SES and childhood obesity, within subgroups of the population, is an area that requires further research.

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