

SHORT COMMUNICATION

Risk Factors of Childhood Obesity and Overweight in Young Children and Adolescents Aged Between 5 to 15 Years in Urban Bangladesh: A Scoping Review

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ABSTRACT

Introduction: Childhood obesity is one of the most serious public health challenges of the 21st century. The problem is global and is steadily affecting many low- and middle-income countries, particularly in urban settings. Risk factors for obesity in this context have not been explored. The objective of this study was to identify the risk factors associated with childhood obesity/overweight among young children and adolescents 5-15 years of age in urban Bangladesh. **Methods:** A scoping review based on York methodology was performed. This methodology involves a comprehensive search of published academic articles, conference proceedings and grey literature through PubMed, Bangla JOL, Google and Google scholar, limited to English-written papers. **Results:** Findings revealed that having at least one overweight parent and engaging in sedentary activities for more than 4 h a day were independent risk factors for childhood overweight and/or obesity. Children who spent ≥ 30 min each day in outdoor games at home that involved physical exercise had decreased odds (OR = 0.38, 95% CI: 0.1–0.8) of being overweight or obese compared to children who did not exercise at home. **Conclusion:** Spending much time seated or somewhat inactive were key risk factors for childhood obesity and overweight. More research, prevention and management of childhood obesity/overweight in young children and adolescents in urban Bangladesh should be a policy priority.

Key words: Bangladesh children, childhood health factors, obesity, overweight, prevention, public, risk

INTRODUCTION

Obesity is a term used to describe the excess accumulation of body fat which puts a person at increased risk of morbidity and premature death (WHO 1995). Giving a specific definition of obesity is problematic in that there is no clearly defined point at

which body fat becomes excessive. Added to this, body fat is not easy to measure directly, and so for epidemiological purposes, measures of relative weight are often used as a proxy for body fat (Ogden *et al.*, 2007). The most widely used indirect measure of obesity based on relative weight is Body Mass Index (BMI). Childhood obe-

sity is one of the most serious public health challenges of the 21st century. The problem is global and is steadily affecting many low- and middle-income countries, particularly in urban settings. The prevalence has increased at an alarming rate. Globally, in 2013 the number of overweight children under the age of five, is estimated to be over 42 million. Close to 31 million of these children are living in developing countries (WHO 2014). Obesity in children and adolescents is rising alarmingly and approaching epidemic proportion in many economically developed countries, particularly in USA, Canada, Australia and several European countries (Wang & Lobstein, 2006). Overweight and obese children are likely to continue being obese into adulthood and more likely to develop non communicable diseases like diabetes and cardiovascular diseases at a younger age. Overweight and obesity, as well as their related diseases, are largely preventable. Prevention of childhood obesity therefore needs high priority.

In the United Kingdom, the escalating prevalence of childhood obesity seen over the last three decades is of great national concern. It is forecasted that up to 70% of girls and 55% of boys will be overweight or obese by 2050 (Government Office for Science, 2007).

To combat the burden of obesity different stakeholders have taken a variety of strategies to address diet, physical activity and health. In low-income countries or countries in a transitional phase, where under-nutrition is still widely prevalent, control of obesity will be an additional burden (Chopra, Galbraith & Darnton-Hill, 2002).

A key strand of the UK government's strategy to address childhood obesity is the National Child Measurement Programme (NCMP), which was set up to monitor prevalence trends and inform delivery of services for children locally and nationally. Overweight and obesity have reached epidemic proportions in many countries

in Asia. Importantly, some Asian nations are experiencing a shift towards overweight and obese at a much younger age, compared to those in the Western countries. Among Asian countries, Thailand has the highest rate of obesity, and India has the lowest rates (Ramachandran & Snehalatha, 2010).

The prevalence of overweight and obesity is rapidly increasing in China, where the prevalence of overweight has increased from 5.3% to 13.6% among men and 9.8% to 14.4% in women between 1992 and 2002 (Boffetta *et al.*, 2011). Given the fact that not many studies are conducted to determine the possible risk factors of childhood obesity/overweight in young children and adolescents aged between 5 to 15 years in urban Bangladesh, there is need to examine the possible risk factors of obesity/overweight among young children and adolescents in urban Bangladesh. The results of this study may be used as part of evidence for drawing up programs that would have better intervention strategies on how management of childhood obesity/overweight in young-children can be improved and maintained. Therefore, the significance of this study cannot be overemphasised.

METHODS

A comprehensive search of published academic articles, conference proceedings and grey literature was carried out through Pub Med, Google and Google scholar, limited to English-language papers. A review was performed based on the York methodology outlined by Arksey and O'Malley, 2005 from the University of York, United Kingdom.

The York framework suggests five stages that we have followed for this review:

Stage 1 : Identifying the research question

Stage 2 : Identifying the relevant studies

Stage 3 : Study selection

Stage 4 : Charting the data

Stage 5 : Collating, summarising and reporting the results

The inclusion criterion was information about obesity/overweight in young children and adolescents; more recent research studies were used (2005 onwards). Papers were excluded if the study sample was older than 15 years or less than 5 years of age related to countries other than Bangladesh.

Ethical approval

This study was approved by Department of Public Health, Daffodil International University Dhaka-1207 Bangladesh.

RESULTS

Findings revealed that having at least one overweight parent and engaging in sedentary activities for more than 4 h a day were independent risk factors for childhood overweight and/or obesity. Moreover, eating fast foods and snacks is also a key contributor while exercising more than 30 min a day at home was a protective factor.

Children who spent ≥ 30 min each day with outdoor games at home that involved physical exercise had decreased odds (OR = 0.38, 95% CI: 0.1–0.8) of being overweight or obese compared to children who did not exercise at home. However, no association was found between childhood overweight or obesity and duration of total physical activity for ≥ 60 min per day, duration of physical activity at school, sex, or maternal education level.

Having at least one overweight parent and spending >4 h each day on sedentary activities such as watching television and/or computer games were risk factors for overweight or obesity. Physical activity at home for ≥ 30 min each day was protective against childhood overweight or obesity.

Overall higher socio-economic status, parents higher education (maternal), higher ranked occupation, parental obesity, urban residence and physical inactivity were found to be positively associated with overweight and obesity. One study suggests that vitamin A supplements (OR

= 1.665) and mother's higher education (OR = 1.98) were positively associated with healthy, non-obese children (Rahman *et al.*, 2009).

DISCUSSION

Having at least one overweight parent increased the likelihood of a child being overweight, a finding consistent with previous studies in middle- and high- income countries such as Brazil and Australia (Giugliano & Carneiro, 2004).

Obesity tracks in families and BMI of the mother and father are two of the strongest predictors of child overweight. In recent years, progress was made in identifying genes that may contribute to this effect. Rapid increase in childhood obesity has also been attributed to a shift in the activity patterns from outdoor play to indoor entertainment: television viewing, internet, and computer games. A study suggests that decreasing any type of sedentary time is associated with lower health risk in youth aged 5-17 years. In particular, the evidence suggests that daily TV viewing in excess of 2 h is associated with an upward BMI (Bhuiyan, Zaman & Ahmad, 2013).

Physical activity plays an important protective role in obesity. A study in Brazil revealed that prevalence of overweight and obese was higher among children who travelled to school in motor vehicle than children who travelled by cycle or who walked to school (Guedes *et al.*, 2011).

Fast foods are a key contributor to the rising prevalence of obesity among children because of poor nutritional quality of these foods. Fast foods have higher total energy, total fat, and saturated fat, refined carbohydrates and lower fiber and higher energy density (Dundar & Oz, 2012).

CONCLUSION

In conclusion, there are few published studies that determines the risk factors of childhood obesity/overweight in young chil-

dren and adolescents aged between 5 to 15 years old in urban Bangladesh. Spending much time seated or somewhat inactive are key risk factors for childhood obesity and overweight. While underweight predominates among the rural children, obesity and overweight prevail among the urban children. This study is, however, limited in scope due to reliance on secondary data which did not sufficiently explore other variables of interest. Other limitations include lack of adequate resources and time.

RECOMMENDATIONS

To combat the future dual burden of communicable and non-communicable diseases as a consequence of underweight and overweight, prevention of obesity in Bangladesh and other developing countries needs to go hand-in-hand with continued public health efforts to tackle poverty and communicable diseases. Sound dietary practices, maintenance of regular physical activities starting as early as infancy, parental initiatives and social support interventions are the most important strategies to tackle childhood obesity. Home-based strategies, particularly parental initiatives are necessary in order to influence the diet and physical activity of children.

Conflict of interests

The authors declare that they have no conflicting interests.

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