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Review Paper

Overweight and obesity among children and adolescents in Bangladesh: a systematic review and meta-analysis



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ABSTRACT

Objectives: The increasing prevalence of overweight and obesity among children (0–12 years) and adolescents (13–19 years) has emerged as a major public health threat in Bangladesh. Unfortunately, there is a serious paucity of credible data on these issues that can be used for policy and programmatic development. This article presents a systematic review of studies on overweight and obesity to present a more accurate estimate by pooling results.

Study design: Systematic review.

Methods: The study systematically reviewed relevant literature published between 1998 and 2015 using predefined inclusion/exclusion criteria. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses checklist was used to identify relevant studies. Measures of heterogeneity and variability were calculated, and a random effect model was used to report pooled prevalence rates of overweight and obesity.

Results: The findings show that prevalence rates of overweight and obesity among children and adolescents varied widely from 1.0% to 20.6% and 0.3% to 25.6%, respectively. The pooled prevalence rates of overweight and obesity were 7.0% (95% confidence interval [CI] 5.0–10.0) and 6.0% (95% CI 4.0–8.0), respectively. The pooled prevalence rate of overweight increased substantially over the years, from 3.6% during 1998–2003 (95% CI 0.3–29.2) to 5.7% during 2004–2009 (95% CI 0.8–30.2) and 7.9% by 2010–2015 (95% CI 5.1–12.1). However, the pooled prevalence rate of obesity registered a sharp decline between 1998–2003 and 2004–2009 – from 9.7% (95% CI 5.7–16.2) to 2.0% (95% CI 0.3–11.1) – and subsequently increased significantly to 9.0% by 2010–2015 (95% CI 5.3–14.6).

Conclusions: This review identified increasing trends in the prevalence of overweight and obesity among children and adolescents in Bangladesh. This study underscores the urgent

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need to promote healthy lifestyles among children and adolescents with a view to effectively address the increasing problem of overweight and obesity. This would also help to prevent the development of chronic non-communicable diseases in adulthood.

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Introduction

Globally, overweight and obesity among children (0–12 years) and adolescents (13–19 years) are considered a major public health issue because of their contribution to the development of chronic non-communicable diseases (NCDs) in adulthood.¹ In developed countries such as Canada, USA, Australia and many European countries, the prevalence of obesity among children and adolescents is high and continues to increase.² In addition, overweight and obesity are considered as an emerging public health threat in developing countries. According to the World Health Organization (WHO) estimates, in 2013, there were more than 42 million overweight children under 5 years of age worldwide. The overwhelming majority of these children – almost 31 million (73.8%) – were living in developing countries. It is projected that the number of overweight children worldwide will reach 60 million by 2020.¹ Childhood obesity is receiving increasing attention because of its association with adult obesity and increased risk of comorbidities in adulthood.³ Childhood obesity is known to be an independent risk factor for adult obesity.^{4,5}

Bangladesh is a densely populated developing country in South Asia that has undergone rapid demographic and epidemiological transitions over the past few decades.^{6,7} Bangladesh is struggling to address the heavy burden of preventable diseases such as diarrhoea and malaria among children. According to the 2014 Bangladesh Health and Demographic Survey, one-third (33%) of the children in the country were underweight.⁸ However, a recent countrywide epidemiological study reported that among 6–15-year-old children, 3.5% were obese, 9.5% were overweight and 17.6% were underweight.⁹ These studies clearly underscore the fact that even in a resource-poor setting such as Bangladesh, where undernutrition is a current problem, combating overweight and obesity could soon emerge as a major public health challenge.¹⁰

Numerous studies have identified several key risk factors contributing to the development of NCDs in low- and middle-income countries.¹¹ These include lack of physical exercise,¹² a sedentary lifestyle, behaviours such as watching television and playing video games, low parental education/awareness and family history of obesity.^{13–22} The increasing prevalence of childhood obesity in Bangladesh needs to be recognized as a major public health issue as it signifies higher risk of being overweight or obese in adulthood.^{23,24} However, numerous studies have identified overweight or obesity among adults as a strong predictor for the development of chronic NCDs, such as type 2 diabetes, hypertension and cardiovascular diseases.^{25–27} Unfortunately, Bangladesh lacks a surveillance system for child and adult nutritional status or body mass index (BMI).

Over the last few decades, a number of studies have been undertaken in urban and rural areas of Bangladesh to measure the prevalence of overweight and obesity.²⁸ However, their findings differ considerably. Several factors may have contributed to such differential findings, including the size and age groups of the population covered, the methodology used, the area of focus (rural and urban) and the time of the studies. Nevertheless, despite differences in their findings, these studies provide important evidence highlighting overweight and obesity among children in Bangladesh as critical public health problems. It is important for both health professionals and policy makers to better understand the trends of overweight and obesity among children to develop effective policies and programmatic interventions to promote healthy lifestyles that could contribute to the prevention of overweight and obesity, thereby helping to combat the increase in chronic diseases.

Methods

Literature search strategy

A comprehensive search of literature on overweight and obesity among children and adolescents in Bangladesh published between 1998 and 2015 was undertaken. Different search engines such as PubMed, Google Scholar and the Bangladesh Journals Online were used to identify relevant publications. The search keywords were ‘nutritional status,’ ‘overweight,’ ‘obesity,’ ‘height,’ ‘weight,’ ‘body mass index,’ ‘prevalence,’ ‘risk factors’ and ‘Bangladesh.’ They were combined using Boolean operators to narrow the search results. Two authors (TB and MSI) searched the relevant literature independently using the selected keywords. A manual search was also conducted to identify any additional articles based on the bibliographies of the published studies (‘snowballing method’). The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist²⁹ was used to extract relevant information from the articles. The PRISMA checklist indicates optimal reporting of systematic reviews specifically for quantitative studies. Data extraction and tabulation of information were performed according to the PRISMA checklist. Moreover, a thorough review of the references and cross-references of the articles was undertaken to identify any relevant studies missed by the electronic and/or manual search. In addition, local journals that could not be accessed online were searched manually, and full-texts of unpublished/grey literature were retrieved from the Library and Information Services Unit of the International Centre for Diarrhoeal Disease Research,

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