**Invited Editorial**

**Overweight and Obesity in Childhood and Adolescence in Bangladesh and Its Consequences and Challenges.**

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Overweight and obesity are preventable public health issues with incidences and prevalence that have increased in the past decades, resulting in an obesity epidemic, overwhelming the burden of non-communicable diseases (NCDs) in most countries across the globe. There is alarmingly upsurge of overweight and obesity in the low-income and the middle-income countries (LMICs). Bangladesh reached the lower-middle-income status in 2015 ¹. Bangladesh is home to a population of 164 million people², with children comprising 40% ³ and adolescents comprising 21% of the total population ⁴. The poverty rate has declined from 43.5% in 1991 to 14.3% in 2016, and additionally, the World Bank is expected to reduce it further to 11.9% by the end of the 2021-22 fiscal year ¹,⁵.

It has been documented that 39 million children under the age of 5 were globally overweight or obese in 2020. Over 340 million children and adolescents aged 5-19 were overweight or obese in 2016 ⁶. Furthermore, it has been reported that over 1.9 billion adults are overweight, and 650 million are obese. Around 2.8 million people demises are delineated due to excessive amount of body fat. Overweight and obesity have become a significant public health delinquent in both high-income countries (HICs) and LMICs⁷. Overweight and obesity are demarcated by WHO as atypical or unnecessary fat buildup that only offers health hazards. A body mass index (BMI) above 25 is overweight, and above 30 is obese ⁸. It has been reported that the rising incidence of Type 1 and 2 diabetes mellitus is associated with obesity, oversight, and high BMI ⁹-¹¹. The diabetic population in 2019 was 463 million around the globe and is anticipated to escalate to 578 and 700 million by 2030 and 2045, respectively ¹². It has been expected that 22.3 million Bangladeshi people will be living with diabetes by 2045 unless proper preventive

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strategies has implemented stringently, resulting in the country will have the 7th highest diabetes prevalence rate worldwide. Ominously, because of the increasing prevalence of childhood obesity, a growing percentage of new cases of diabetes occur among the younger population. Childhood, adolescence, and adult obesity are equally prevalent in many European countries and around the globe. Studies from India and Africa also indicate a similar trend. Analysis of 450 cross-sectional surveys from 144 countries with an estimate from 1990-2010 and a projection from 2015-2020 gave an alarming picture of preschool childhood overweight/obesity in Asia compared to other continents, with the highest occurrences in South Asia countries, including Bangladesh. Recent studies regarding childhood obesity reported a frightening representation. There is a dearth of comprehensive literature published on childhood and adolescence overweight/obesity in Bangladesh. However, limited studies have been published. A review in 2014 on a total of 21 published studies in Bangladesh documented the prevalence of childhood and adolescence overweight ranged from less than 1-23% or more, and that of obesity ranged from less than 1-17.9% based on different reference standards, with higher percentage amongst urban children across different age groups and sexes. Still, the valid comparison was not feasible. A study on urban children reported a 5-fold increase in these health problems in the past decades. In addition, other studies documented 17.8% and 7.6% obesity in children of different age categories, and one more study reported similar high cases. A descriptive cross-sectional survey on 150 primary school children of Dhaka city, Bangladesh, found a prevalence of overweight and obesity respectively, 28% and 16% among the total 75 students in public schools and 36% and 25.3% respectively among the total 75 students in private schools. This study also determined preference for fast food, lack of exercise, and sufficient consumption of fruits and vegetables as contributory factors. It is reiterated that body mass index (BMI)(kg/m^2) provides the most useful population-based measure of overweight and obesity. For children under 5 years of age: overweight is weight-for-height >2 SD above, and obesity is weight-for-height > 3 SD above the WHO Child Growth Standards median. For children aged between 5-19 years (adolescents): overweight is the BMI for age > 1 SD above, and obesity is the BMI for age >2 SD above the WHO Growth Reference median. Abdominal waist circumference is also an important marker of obesity. Obesity is etiologically related to varied biological, developmental, behavioral, genetic, and environmental factors. Additionally, research demonstrates that the failure of proper communications between health-service providers and patients may reinforce stigma and low self-esteem, reduce motivation for weight loss, and potentially cause avoidance of routine preventive care. The role of epigenetics, gut microbiome, intrauterine, and intergenerational effects have emerged as contributing factors to the problem. Other factors, including small for gestational age (SGA) status at birth, formula rather than breastfeeding in infancy, and early introduction of protein in an infant’s dietary intake, have been reportedly associated with weight gain that can persist later in adulthood. Family history of obesity in parents and grandparents, dyslipidemia, and coronary heart diseases (CH) are determinants of early-onset and severe obesity problems and markers of risk for precocious obesity. Children and adolescents in low- and middle-income countries (LMICs) are more vulnerable to the illness, being exposed to high-fat, high-sugar, high-salt, energy-dense, and poor-micronutrient foods, which tend to be lower in cost but also lower in nutrient quality. There is substantial evidence to associate soft drink consumption with weight gain. Soft drink intake is also related to an increased risk of diabetes mellitus, cardiovascular disease, and gout. The obesity-related childhood behavior is not only shaped by parental behavior but also by 5 critical
obesogenic environments: schools, television, the internet, retailers, and food advertising campaigns. The term “obesogenic environments” has been defined by Swinburn and colleagues as “the sum of the influences that the surroundings, opportunities or conditions of life have on promoting obesity.”

Childhood obesity is a marker of adulthood obesity, premature death, and disability. There is an increased probability of cardiovascular diseases, breathing difficulties, fractures, insulin resistance, impaired glucose tolerance, and psychological effects (low self-esteem, low confidence, impairment in cognitive functioning (memory, attention, visuospatial ability, response inhibition), movements/functions. Clinical obesity in adolescents is linked to menstrual irregularities, sleep disorders, and metabolic syndrome. It is further underpinned by serious terminal diseases such as cancers and type 2 diabetes mellitus, as reviewed in more than 1000 studies that reported the increased risk for at least 13 types of cancer. These health disorders act as a double edge sword, and increases financial overhead in both direct and indirect way on affected families. The direct cost is linked to healthcare expenditure from obesity and attributable diseases requiring attention and treatment (curative, rehabilitative, preventative care, ancillary services, and medical goods). The Direct Medical Cost = OAF × THE (OAF is obesity attributable fraction and THE is total therapeutic expenditure). There is a significant positive association between OAF and obesity prevalence. Indirect costs represent the economic loss due to premature mortality and morbidity. They include the following components: financial loss from premature mortality, missed days of work (absenteeism), and reduced productivity while at work (presenteeism). Economic loss from premature mortality is calculated as the number of years of potential life lost by individuals (by age group and sex cohort) who died from obesity multiplied by the economic value of a life year.

The national US rate of obesity among children between 2 to 19 years climbed from 19.3% in 2019 to 22.4% in 2020, with the annual direct cost of obesity management estimated at $14 billion during the pandemic. The majority of industrialized, high-income-countries (HICs), predominantly west European countries, Canada, Australia, New Zealand, and Japan, have strategies to make available healthcare for the entire population regardless of socio-economic status (SES), employment status, or ability to pay principally based on government-financed. The World Health Organization (WHO) defines universal healthcare as “ensuring that all people have access to needed health services (including prevention, promotion, treatment, rehabilitation, and palliation) of sufficient quality to be effective while also ensuring that the use of these services does not expose the user the financial hardship.” A universal healthcare approach does not exist in the USA.

The United Kingdom runs a state-supported universal healthcare strategy called the National Health Service (NHS). In Australia, healthcare is a mix of public and private services. In certain countries of African continent had substantial improvement in primary health care (PHC) service. Thereby, PHC in these countries is affordable and reasonably good access to healthcare for most of the population. Nevertheless, such development is heavily dependent on international donor agencies. In Bangladesh, there is a pluralistic health care system. The government health care expenditure has plunged from 6.2% to 4.3%, and the out-of-pocket payment (OPP) is 64.7%.

Consumers know far less about the health and nutrition content of the foods than the suppliers. Environmental changes, effortless access to high-calorie fast foods, increased consumption of sugary beverages, and sedentary lifestyles are linked with rising obesity. The easy availability of high caloric fast foods, and super-sized food portions, are increasingly common choices due to their palatability and often being less expensive.
than fruits and vegetables. We can ask ourselves how to address the childhood obesity problem; by focusing on choices that one makes in the obesogenic environment or limiting access to the favorite weight-gaining food products available. Studies have shown the benefits of effective government legislation on access to harmful food products and taxes on sugar-containing beverages. Parents must be aware of childhood overweight and obesity as severe health concerns to seek proper health services. Parents should be proactive, unlike the common acute and chronic ailments of childhood and adolescence (such as asthma, diarrhea, fever, allergy, infections, etc.) to seek health services. Obesity and overweight are often blatantly ignored and delay early intervention, which inevitably increases the risk of significant health hazards. In addition to behavioral and dietary recommendations, changes in the community-based interventions are crucial measures.

The WHO introduced a voluntary target to stop the increase in obesity prevalence by 2025. Unfortunately, the results show most countries have a less than 10% chance of meeting the 2025 target for halting the rise in obesity. Country-level income inequality also influences obesity. The socio-cultural landscape of LMICs and the epidemiological transition demands early prevention of childhood obesity and controlling the obesogenic environmental issues as a health economic approach.

In its national strategy under the nutrition section, Bangladesh has stated vital processes: micronutrient supplementation of diet, community-based awareness campaigns, advocacy on good nutritional practices and healthy food, access to sports and physical activity in workplace and community recreational areas (e.g., parks). Routine assessment of all children must be standard clinical practice from very early childhood, and long-term sustainable changes are ingrained in the active participation of families, schools, and communities. In the footsteps of developed countries such as the US and the UK, in our country, we need to develop support innovations for businesses to build healthier food industries, ensure the availability of healthy food choices in all public health settings, ensure more explicit food labeling, provide a suite of technology-based applications to make best options and establishment of local weight management services and doctors making referrals a needed.

Childhood overweight and obesity are preventable states of health that can be modified by addressing multiple factors that are the significant determinants of the conditions. Obesity has been declared an epidemic with urgent implications for affected countries, including western developed countries and countries in economic transition, quality of life, growth, and development of children with overweight and obesity problems, economic productivity, and premature loss of life. It is essential to take a holistic approach to manage this health problem.

It is imperative to develop methods and strategies to motivate health-seeking behavior in the community so that parents and their children can actively participate in reducing the incidence and prevalence of obesity and obesity-related health disorders and their long-term irreversible consequences. Family physicians or pediatricians need to be proactive in identifying the overweight or obese child and then engaging the parents as partners in a management plan; hence, they should counsel parents to encourage and effectively alter their children’s food habits through well-paced crucial family-based interventions. Bangladesh needs to develop and implement effective and pragmatic preventive health intervention programs with the long-term vision of reducing associated morbidity, mortality, and reducing financial overhead because of overweight/obesity related illness. Additionally, the country need to ensure effective surveillance and monitoring.

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References


Sultana S. Prevalence and risk factor of childhood overweight and obesity in primary school children of Dhaka city. Master thesis. Institute of Health and Society, Department of General Practice and Community Medicine, Faculty of Medicine, University of Oslo; 2010. Available at https://www.duo.uio.no/bitstream/handle/10852/30024/ShuhanaxSultana.pdf?sequence=1 [Accessed May 21, 2022].


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