

Overweight and Obesity in Children in Developing Countries

The rising worldwide prevalence of obesity is a key public health problem, sparing no age, sex, geographical region or societal groups.¹ The prevalence of obesity in children parallels that of adults, and childhood obesity estimates are steadily increasing worldwide. Overweight and obesity in children have attained epidemic proportions globally; an estimated 38.2 million children under the age of 5 years were reported overweight or obese in 2019.² Among children and adolescents aged 5-19, the prevalence of overweight and obesity has risen considerably from a mere 4% in 1975 to over 18% in 2016. The upsurge has occurred similarly among boys and girls. whereas just under 1% of children and adolescents aged 5-19 were obese in 1975, more than 124 million children and adolescents (~7%) were obese in 2016.²

The growing trend of overweight and obesity in children, particularly in developing countries, is a concern. Once considered a high-income country issue, overweight and obesity are now rising in low- and middle-income countries, particularly in urban settings. In Africa, overweight children under five years have increased by nearly 24% since 2000. Almost half of the children under five years who were overweight or obese in 2019 lived in Asia. Initially, the emergence of obesity was related mainly to the populations' higher socioeconomic strata among developing countries.³ However, more current trends indicate a shift in the prevalence from the higher to the lower socioeconomic status.⁴ Some recent studies indicate that obesity is on the rise in several target populations, including adolescents of low socioeconomic status.⁵

Childhood obesity is known to have a substantial impact on both the physical and psychological well-being of the affected children. Overweight and obese children are likely to have hypertension and hyperlipidemia, insulin resistance, increased risk of impaired glucose tolerance and type 2 diabetes - all risk factors for future cardiovascular disease. Obese children are more likely to remain obese until adolescence or even adulthood. Apart from a higher chance of obesity, childhood obesity is associated with premature death and disability in adulthood. The direct costs of childhood obesity in the United States are estimated at \$14.3 billion annually. In addition to the direct cost of health care expenditure, obesity also imposes costs in lost productivity and foregone economic growth due to lost workdays, lower productivity, mortality, and permanent disability. Whereas we don't have such data on the financial burden of childhood obesity in developing countries, it can be anybody's guess.

While the mechanism of obesity development is not wholly understood, environmental factors, lifestyle choices, and cultural environment play critical roles in the rising prevalence of obesity globally. In general, overweight and obesity result from increased caloric and fat intake. Numerous factors have contributed to the upsurge in the majority of obesity in children, including unhealthful eating practices, lack of physical activity, increased sedentary behaviours, and shorter sleep periods. Other factors, such as parenting and family factors, school factors, social norms, and community food and physical activity environments that affect children's eating and physical activity behaviours, also contribute to the increased prevalence of childhood obesity. There is supporting evidence that

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excessive sugar consumption through soft drink intake and increased portion size has played a significant part in the rising rates of obesity worldwide. In addition, the continued decline in physical activity level with increased sedentary behaviours (i.e. screen time) has further contributed to the problem.

In this journal issue, Bhat et al. have reported a study on the prevalence and factors associated with overweight and obesity among school children aged 5-15 years in Kashmir valley. A total of 9,576 students, both male and female, under age group 5-15 years, were studied all over the Valley in this community based prospective study. The prevalence of overweight by IOTF criteria was 24.7%, while obesity was 11.5%. While overweight and obesity were associated with higher age and female gender, no association was reported with urban status. This lack of association with urban class in this study is very much concordant with the finding of our NCD Risk Factor Collaboration (NCD-RisC) group published in Nature a couple of years back. Contrary to the dominant paradigm, around 55% of the global rise in mean BMI and some 80% in some low- and middle-income regions was due to increased BMI in rural areas in the last three decades.⁶

Childhood obesity can profoundly influence the child's physical health, social and emotional well-being, and confidence. Therefore, further research is needed on the key drivers of the childhood obesity epidemic worldwide, especially studies conducted in non-school-based settings. The literature on interventions that do not include a school component is sparse. More studies are needed that test environmental and policy-based interventions. Primary healthcare providers could play an essential role in preventing and managing childhood obesity. Obesity results from a complex mixture of biological, behavioural, social, economic, and environmental factors. A practical and sustainable strategy for obesity prevention may have to target many factors. The cost-effectiveness of interventions

also should be assessed, which will add substantial value to the evaluation of an intervention and are also crucial for the promotion and dissemination of effective interventions. There are many promising opportunities and challenges for international collaboration on childhood obesity prevention. More research is needed to facilitate such collaboration and overcome the barriers. It is more important than ever for the paediatric research community to engage in collaborative research during the present COVID-19 pandemic.

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