

Childhood obesity: economic burden and inequities

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The prevalence of obesity has risen steadily over the past three decades. In 2019, it was estimated that over 150 million children in the world had obesity [1]. Interestingly, prevalence of obesity in Europe is rising fastest in low socioeconomic population groups, and countries with higher income inequality have higher levels of obesity, especially in children [2]. Although the within-country proportion of children with overweight and obesity is higher in high-income countries than low- and middle-income countries (LMICs), the vast majority (87%) of children under the age of five years with overweight or obesity live in LMICs [3]. Childhood obesity is an emerging public health concern due to its negative impacts on physical and mental well-being. Some of these complications include depression, type 2 diabetes, hypertension, coronary heart disease, osteoarthritis, fatty liver, certain forms of cancer, and an overall increase in mortality [4].

Economic burden

Childhood obesity is an economically draining disease, and poses direct and indirect costs such as medical expenditure and job absenteeism, respectively. Compared to adults who were normal weight as children, costs are 8 times higher for adults with a history of childhood obesity, and childhood obesity is the top contributor to the overall cost burden across all decades of life [5, 6]. In the United States alone, elevated body mass index in childhood was associated with \$14.1 billion in additional prescription drug, emergency room, and outpatient visit costs annually [7]. Sonntag *et al.* estimated that decreasing the prevalence of childhood obesity by 1% in Germany could reduce the lifetime excess costs by up to €4.1 million [8].

Interventions to target childhood obesity

Risk factors for childhood obesity can be broadly categorized into genetic, biologic and environmental, with diet and exercise being the major modifiable factors [4]. These modifiable factors are important to identify in order to organize effective interventions. Obesity interventions have larger effect sizes in early childhood, resulting in higher cost savings [8]. It is important to note that managing childhood obesity requires collaboration between healthcare providers, families and children. A clear example of such collective efforts is evident through The KidFit Health and Wellness Clinic in Mississauga, Ontario; a unique multi-disciplinary approach looking at the many dimensions contributing to a child's weight problem. It is a team comprised of a paediatrician, dietitian, child psychologist, social worker, activity therapist, nurse, and program manager. The program is aimed to assist families with children with obesity in initiating lifestyle changes, behavioural treatment through individualized care, group education and physical

activity sessions. Given the community's relatively high prevalence of childhood obesity and resource limitations, the program now has a wait time of over one year.

The impact of socioeconomic status on development of interventions

The evidence base on childhood overweight and obesity, and programmes for their prevention, builds predominantly on research from high-income settings. Despite the development of multiple initiatives focused on reducing childhood obesity, their uptake remains unknown, particularly in low socioeconomic populations, which have a higher exposure to unhealthy food and advertising of unhealthy foods, and lower access to safe spaces for physical activity [2]. People from low income groups have lower participation in obesity interventions or drop out early. Few obesity interventions have been evaluated for their effectiveness in low socioeconomic populations, and many of them may contribute towards increase societal inequities [9]. A recent study showed the need for specifically tailoring interventions for such populations, which should be mindful of cost, culturally diverse, not pose language or literacy barriers [10]. While educational campaigns alone are less effective in low socioeconomic groups, population based policies such as restrictions on marketing certain foods to children, are likely to have a greater impact on reducing obesity inequalities. Policies should be guided by a framework set to increase equity impact in obesity prevention [11]. Such recommendations have been summarized by the World Health Organization in the policy guidelines for Obesity and Inequities [2]. Additionally, an equity-oriented obesity prevention framework to guide practitioners and researchers was proposed by Kumanyika in 2019 [12].

Summary

1. Recognize that childhood obesity is an emerging non-communicable disease.
2. Childhood obesity is economically draining, and global advocacy initiatives are required to increase resource investment to overcome this epidemic.
3. Interventions to promote healthier lifestyles in children should be designed with a special focus on socioeconomic status of the communities at hand.

References

1. Foundation, C.O., *Statistics*.
2. Loring, B. and A. Roberston, *Obesity and inequities*. World Health Organization, 2014.
3. Organization, W.H., *UNICEF-WHO-The World Bank Group . Joint Child Malnutrition Estimates—Levels and Trends*. . 2018.
4. Kaur, Y., et al., *A systematic review of genetic syndromes with obesity*. *Obes Rev*, 2017. **18**(6): p. 603-634.
5. Sonntag, D., *Why Early Prevention of Childhood Obesity Is More Than a Medical Concern: A Health Economic Approach*. *Ann Nutr Metab*, 2017. **70**(3): p. 175-178.
6. Sonntag, D., et al., *Estimating the lifetime cost of childhood obesity in Germany: Results of a Markov Model*. *Pediatr Obes*, 2015. **10**(6): p. 416-22.
7. Trasande, L. and S. Chatterjee, *The impact of obesity on health service utilization and costs in childhood*. *Obesity (Silver Spring)*, 2009. **17**(9): p. 1749-54.
8. Sonntag, D., S. Ali, and F. De Bock, *Lifetime indirect cost of childhood overweight and obesity: A decision analytic model*. *Obesity (Silver Spring)*, 2016. **24**(1): p. 200-6.
9. Venturelli, F., et al., *The effect of Public Health/Pediatric Obesity interventions on socioeconomic inequalities in childhood obesity: A scoping review*. *Obes Rev*, 2019. **20**(12): p. 1720-1739.
10. Coupe, N., S. Cotterill, and S. Peters, *Tailoring lifestyle interventions to low socio-economic populations: a qualitative study*. *BMC Public Health*, 2018. **18**(1): p. 967.
11. Hillier-Brown, F.C., et al., *A systematic review of the effectiveness of individual, community and societal level interventions at reducing socioeconomic inequalities in obesity amongst children*. *BMC Public Health*, 2014. **14**: p. 834.
12. Kumanyika, S.K., *A Framework for Increasing Equity Impact in Obesity Prevention*. *Am J Public Health*, 2019. **109**(10): p. 1350-1357.