

Double burden of malnutrition in LMICs

One third to half of all children under five in low and middle income countries (LMICs) are underweight or stunted because of poverty, ignorance and poor choices of nutrition supplementation to children by their caretakers. This subject has been discussed under this page before (see Old Items > Feeding the toddlers on 7 April 2019 and Growth Monitoring and Universal Health Coverage on 27 January 2019). However, it is not only undernutrition but overnutrition is also affecting LMICs, creating a double burden of malnutrition in poor countries. Both undernutrition and overnutrition traverse the life course and are important both at the individual and national level. (*look for next week's "This Week" - after effects of stunting*). For both the conditions, awareness and education to mothers and communities to feed children adequately may provide the answer.

Raj and Kumar concluded in 2010 that obesity in children and adolescents has risen to significant levels globally with serious public health consequences. In addition to cardiovascular, emotional and social issues, it poses a serious hazard to the basic health care delivery system. Unless this epidemic is contained at a war footing, the implications of this global phenomenon on future generations will be serious. The reversibility of this disease with suitable intervention strategies should be seen as an opportunity and efforts pursued with vigour. [\[1\]](#)

The fundamental cause of obesity and overweight is an energy imbalance between calories consumed and calories expended. Changes in dietary and physical activity patterns are often the result of environmental and societal changes associated with development and lack of supportive policies in sectors such as health, agriculture, transport, urban planning, environment, food processing, distribution, marketing, and education. Obesity is preventable.

According to WHO estimates worldwide, 41 million children under the age of 5 were overweight or obese in 2016 and over 340 million children and adolescents aged 5-19 were overweight or obese. [\[2\]](#) Harish Ranjani et al in a systematic review of children 1-18 years in India concluded that overweight and obesity rates in children and adolescents are increasing not just among the higher socio-economic groups but also in the lower income groups where underweight still remains a major concern, suggesting a balanced and sensitive approach addressing economic and nutrition transitions to effectively tackle this double burden paradox in India. [\[3\]](#)

China has the world's biggest population of obese children and is second only to the United States in the number of obese adults, a global study has found. According to the Global Burden of Disease report led by a team at the University of Washington in Seattle, China had 15 million obese children in 2015, followed by India with 14 million. China also had 57 million obese adults, second globally to the United States with 79 million.

We are now witness to an evolving epidemic of childhood obesity in the United States and other westernized countries, along with the emergence in young people of serious complications, including insulin resistance, type 2 diabetes mellitus, hyperlipidemia, hypertension, and fatty liver disease. [\[4\]](#)

Sugar-sweetened beverages (SSBs) add empty calories to children's diets and may increase the risk of weight gain, obesity, and diabetes. Substituting water for SSBs may reduce total energy intake. Furthermore, school-based interventions to displace SSBs by increasing water

access were associated with decreased body mass index. One out of every 5 kids and young adults reported that they did not drink water in the day prior to the survey. Not drinking water was associated with consuming an extra 93 calories per day, on average, and 4.5% more calories from sweetened beverages such as sodas, sports drinks and juice, according to the study.[\[5\]](#)

It is evident from the short literature review here that the epidemic of obesity is very much a reality with dire consequences for health of the future generations. The growing issue of childhood obesity can be slowed, if society focuses on the causes.

Some known facts:

1. Children of obese mothers have a tendency to be obese as they grow and become adolescent. It can be a vicious circle unless interrupted;
2. Parental education and economic status is conversely correlated to the risk of obesity;
3. Obesity results from an imbalance between energy intake and expenditure;
4. Basal metabolic rate is accountable for 60% of total energy expenditure in sedentary adults. It has been hypothesized that obese individuals have lower basal metabolic rates;
5. Parents have a responsibility as children learn by modelling parents' and peers' preferences, intake and willingness to try new foods;
6. Evidence suggesting that families who eat together consume more healthy foods;
7. Eating out or watching TV while eating is associated with a higher intake of fat;
8. Authoritarian restriction of "junk-food" is associated with increased desire for unhealthy food and higher weight;
9. Studies demonstrate that adolescents associate junk food with pleasure, independence, and convenience, whereas liking healthy food is considered odd;
10. The dietary factors that have been examined include fast food consumption, processed food, sugary beverages, snack foods, and portion sizes;
11. Although genetics is being recognised as one of the biggest factors as a cause of obesity, we cannot resign to the fact and do little on our part.

There are many components that play into childhood obesity, some being more crucial than others. A combined **diet and physical activity intervention** conducted in the community with a school component is more effective at preventing obesity or overweight. Moreover, if parents set an example and encourage a healthier lifestyle at home, many obesity problems could be avoided. What children learn at home about eating healthy, exercising and making the right nutritional choices will eventually spill over into other aspects of their life. This will have the biggest influence on the choices kids make when selecting foods to consume at school and fast-food restaurants and choosing to be active. Focusing on these causes may, over time, decrease childhood obesity and lead to a healthier society as a whole.[\[6\]](#)

References:

[1] Raj M and Kumar K. Obesity in children & adolescents [**Indian J Med Res**](#). 2010 Nov; 132(5): 598–607.

[2] [**https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight**](https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight)

[3] Harish Ranjani, et al. Epidemiology of childhood overweight & obesity in India: A systematic review. *Indian J Med Res*. 2016 Feb; 143(2): 160–174. doi: 10.4103/0971-5916.180203

[4] Freemark M. Childhood obesity in the modern age: global trends, determinants, complications, and costs. In: Freemark M, ed. *Pediatric obesity: etiology, pathogenesis, and treatment*. 2nd ed. New York: Humana Press, 2018:3-24.

[5] Rosinger AY et al. Association of Caloric Intake From Sugar-Sweetened Beverages With Water Intake Among US Children and Young Adults in the 2011-2016. National Health and Nutrition Examination Survey. *JAMA Pediatr*. Published online April 22, 2019. doi:10.1001/jamapediatrics.2019.0693

[6] K Sahoo et al. Childhood obesity: causes and consequences. [**J Family Med Prim Care**](#). 2015 Apr-Jun; 4(2): 187–192.