

Preventing obesity in India: Weighing the options

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Obesity is a vexing problem in the developed economies.^[1,2] For developing countries like India, morbid obesity has not yet become a public health priority. Why is this so? Well, the reasons are still far from clear. Probably, India is, in our own eyes, still a country of poverty, hunger and malnutrition. Yet, statistics suggest otherwise. India is one of the capitals of diabetes and cardiovascular diseases. India's economy is, by all accounts, better poised to withstand the recessionary trends seen across the major nations of the globe, making it less poor and more "wealthy." Yet, it is this very wealth which brings with it an unwanted epidemic of obesity, diabetes and cardiovascular disease. Development brings with itself urbanization and reduction in physical activity. It also fuels inflation, which reduces access to increasingly expensive fruits and vegetables. And, while the rural poor may continue to accrue the benefits of physical activities, the urban poor will be at a relative disadvantage – how will they be able to afford going to the fitness centers that continue to offer health and succor to the urban elite?

Indian studies, however, indicate that the living conditions in rural areas have improved considerably. Transport facilities, medical care and food habits, educational status, and family income have dramatically improved, which along with easy access to city and television watching, result in unwanted changes in lifestyle. These have eventually led to significant increase in body mass index (BMI) as well as abdominal obesity in both sexes as compared to a similar study conducted in the year 1989. The prevalence of overweight rose from 2 to 17.1%. The changing lifestyle of the rural dwellers was found to be a contributory factor

for the rising rates of obesity and associated metabolic diseases such as diabetes.^[3]

How much is this due to physical inactivity? A cross-sectional survey was conducted in 6–12 urban streets in each of five cities in five different regions of India using a common study protocol and criteria of diagnosis to find out the prevalence of overweight, obesity, undernutrition and physical activity status in the urban populations of India. A total of 6940 subjects (3433 women and 3507 men) aged 25 years and above were randomly selected from the cities of Moradabad (n = 2002), Trivandrum (n = 1602), Kolkata (n = 900), Nagpur (n = 894) and Mumbai (n = 1542). The overall prevalence of obesity was 6.8% (7.8 vs. 6.2%, $P < 0.05$) and of overweight was 33.5% (35.0 vs. 32.0%, $P < 0.05$) among women and men, respectively. The overall prevalence of subjects $>23 \text{ kg/m}^2$ was 50.8% and central obesity was 52.6%. The overall prevalence of sedentary behavior was 59.3% among women and 58.5% among men. Both sedentary behavior and mild activity showed a significantly increasing trend in women after the age of 35–44 years. In men, such a trend was observed above the age of 45 years. Sedentary behavior was significantly ($P < 0.05$) greater in Trivandrum, Kolkata, and Mumbai compared to Nagpur, and was significantly ($P < 0.001$) associated with obesity in both sexes, compared to non-obese men and women.^[4]

There are no quick-fire solutions to the looming threat of the obesity epidemic. The answers lie in innovative thinking. Firstly, we require studies to quantify the problem – not just the prevalence of obesity based on Western norms, but Indian studies looking at the levels of body mass indices that predict adverse outcomes. Fortunately, research is not lacking in this area, and several studies, both from South as well as North India, have confirmed that Indian cut-offs for defining obesity are best placed lower than the Western BMI cut-offs. Secondly, after defining the problem, we need to take urgent steps to prevent obesity. And finally, while preventive programs are in progress, guidelines

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must be made for treating obesity with lifestyle measures, medications for comorbidity, and finally bariatric surgery for severe cases of obesity. This editorial will focus on the second task, i.e. taking steps to prevent the occurrence of obesity in our midst. Some of the opinions expressed in this article may appear to digress from conventional scientific thinking; however, we are merely trying to throw up new ideas so that endocrinologists and stakeholders may attempt to apply these ideas in real-life situations. Nor do we claim that these are the only ideas; there may be better, newer and more effective ideas. As authors, we only suggest that innovative, low-cost ideas need to be utilized as far as preventing obesity is concerned.

What is our recipe for preventing the obesity disaster? Well, in a single sentence, we believe in an obesity prevention program which fuses the scientific logic with India's traditional strengths. In this article, instead of broad ideas, we offer some specific traditional Indian customs which may offer innovative solutions at low cost – maternal nutrition, walking, yoga, meditation, and the traditional Indian folk dance systems. These are examples of low-cost, indigenous, appropriate and effective public health strategies, which can work wonders. The catch is: we have to accept, and advocate, these strategies [Figure 1].

Epidemic of chronic non-communicable diseases have been associated with increasing obesity or, more specifically, excess of fat at wrong places. Maternal malnutrition associated with low birth weight results in phenotypically “thin-fat baby”, which means that though the baby is weighing less than Western counterparts, it harbors more fat in the body. Current belief is that if fat is stored at right places, i.e. adipose tissue, individual is protected

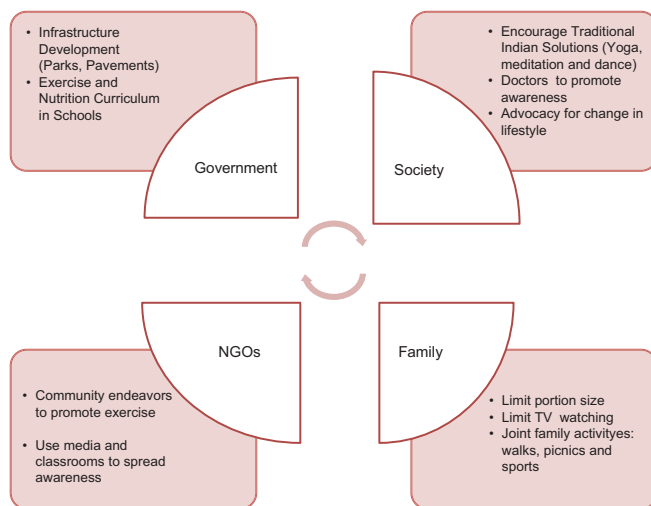


Figure 1: A proposal for a multidisciplinary initiative to tackle the obesity epidemic. The bulleted points indicate the possible measures that could be taken by each important participant in the initiative

from diabetes; if it spills over and gets deposited at ectopic sites, it leads to its adverse effects on various organ systems including muscle, heart, and pancreas. It has been hypothesized that this programming occurs in fetal life, where good maternal nutrition programs the body to store fat at right places and vice versa. Traditionally, Indian mothers are fed well by parents and in-laws. With modernization and living as nuclear family, traditional care is giving way to maintaining body weight at the cost of nutrition to the baby. One may argue that improving maternal nutrition may help in preventing obesity and related epidemics.

Traditionally, we have all been taught that India lives in villages. About 2–3 decades back, the mode of transport in villages was walking and cycling. Two wheelers were scarce and four wheelers were rare. All individuals used to go to school, office, field, and to bring water on feet. One can link mechanization of rural and urban areas to the increasing prevalence of obesity. For example, two wheeler sales have increased from 50,76,551 in 2002 to 84,18,626 in 2009.^[5] This suggests that there is an increasing use of automobiles to commute, with obviously adverse implications on exercise and energy expenditure at the biological level. If we can somehow bring back our traditional custom of walking, it can have a huge effect on social health along with economic impact. For example, if every individual starts walking 30–60 minutes/day, he/she will spend about 150–300 kcal. This will lead to loss of weight of 3–5 kg in a year. A loss of about 5–7% weight can prevent the onset of diabetes by about 58%. Considering the present scenario of increasing prevalence and per capita cost of therapy of diabetes, the savings could be enormous. If we add the indirect saving in the form of fuel saving for kilometers walked per day, one can get enough funds for creating safe and healthy environment for walking.

The first method that we suggest is yoga. This is a uniquely Indian system of health living. Adopted extensively by Western scientists, we are now waking up to the scientific benefits of yoga. In addition to improving physical activity, yoga can help in preventing stress.^[6–9] Stress has been linked to diabetes, obesity and cardiovascular disease. It is not known whether yoga can help in the treatment of obesity; indeed, many obese subjects may find yoga difficult to practice. Several studies have shown yoga to be useful in diabetes.^[6–9] However, if encouraged in schools and colleges in India, yoga can help in preventing stress and may well turn out to be a low-cost strategy in preventing diabetes, obesity and cardiovascular disease.

A more controversial area is meditation. While many equate meditation with faith, meditation is a secular method that

can alleviate stress. Indeed, a recent study has shown that it may even reduce cortisol and catecholamine responses.^[10] Stress has been shown to be linked to overheating and a sedentary life, and alleviating stress is definitely good for health. However, implementation of yoga should take place in the schools and colleges of India so that our younger generations remain healthy and poised to take India to its eventual status of a developed nation.

Another traditional Indian approach which may help tackle the obesity epidemic is our good old Indian folk dance system. Dancing for health is not a new concept. Several publications have suggested that dancing is an effective strategy for improving fitness.^[11-13] From Bihu of Assam to Bhangra of Punjab, not to mention the thousands of equally versatile dance forms, India's dance forms have been recognized as perfect and brilliant, both in their design, content and expression. However, an often-overlooked aspect of these dances has been the biological aspect. Indian dances are physically energy-consuming and can actually make physical activity fun. This is not to suggest that Western dance forms do not require physical effort. Most certainly, Western ballet or rock dancing is hard to perform and physically tiring, but is hardly propitiate for our culturally acclimatized youth. Common dances associated with Western origin, such as party dancing, are associated with consumption of junk food and alcohol use, and these factors may attenuate the potential benefits of dance. Along with the Indian dance forms, some Indian martial arts like Kalaripayattu from Kerala and Thang Tha from Manipur will make physical activity fun, especially for school boys and college-going youth who may not relish the idea of learning traditionally accepted dance forms.

As a disclaimer, we would like to point out that not all aspects of traditional India are healthy. For instance, many traditional Indian foods are oil rich, carbohydrate overloaded, and just plain unhealthy. Also unhealthy are some traditional Indian customs like tobacco chewing and smoking. We suggest that one should choose the most health-friendly among our traditions and customs, and apply them to prevent obesity. This may help improve the implementation of an obesity prevention program. It is high time that endocrinologists spearhead a national obesity prevention program in our country, in order to prevent the looming threat of increasing obesity and its complications like diabetes, hypertension, dyslipidemia, cardiovascular disease, cancer, sleep apnea, and osteoarthritis, to name a few.

As a disease, obesity is complex and its solutions too are difficult. The epidemic of obesity needs to be tackled at

several levels: the individual level, the community level, and the government level. It needs to be addressed at the socioeconomic level as well as in the biological and the behavioral arenas. Technology, political will and legislative action are some of the other innovative solutions that can usher in sweeping changes to tackle the obesity epidemic.^[14,15]

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