

Endocrinology and the Nudge Hypothesis

In this era of double-blind randomized controlled trials, we are asking you to do something unusual – To imagine.

Imagine that you have guests for dinner. As they arrive, you lay out some starters for them to eat. Nothing very healthy. Some spicy fries and the like. However, it turns out that these starters are very delicious.

Too delicious, in fact. Now that your guests have started to consume them, they can't seem to stop. You bring the second, third, and then the fourth servings. They all get eaten up in quick time.

You now begin to worry.

For one, you feel that the spicy fries are unhealthy when consumed in excess, and that continuously eating them might give your guests a health problem, say, an attack of gastritis. Second, you feel that if they continue to eat the fries, they may not leave enough space in their stomachs for the main course of the evening. You, therefore, act.

You quietly remove all the starters and take them back to the kitchen.

Very simply put, you have taken away a choice from your guests. For their own benefit, of course. They now are saved from the health troubles of a binge on starters, and in addition, they manage to enjoy the main course after that.

You have given them a nudge in the right direction by limiting their choices. People have a tendency to go for the easy, default option, and if that is healthy or good for them, why not give them a nudge?

Just a few weeks ago, Richard Thaler, the creator of the “nudge hypothesis,” was awarded the Nobel Prize for Economics.^[1] His work on behavioral economics has been applied in a wide variety of fields, even endocrinology. The aforementioned anecdote is adapted from a real-life experience narrated by Thaler.^[2]

Take for instance, fortification of salt with iodine. The use of iodized salt is universal today, with about 88% of urban Indians consuming it.^[3] An important public health step, which has prevented endemic cretinism and goiter, this simple step of salt iodization is an example of a nudge in the right direction. By making iodized salt universally available in the country, public health policy experts have made sure that our choices are limited to the use of healthy salt.

There are arguments against iodine supplementation, sometimes, based on biological hypotheses. For instance, one could argue that iodization of salt has been followed by an increase in autoimmune thyroid disease.^[4] However, the evidence for this being a causative link remains tenuous.

Moreover, the prevention of iodine-deficiency disorders, with its far-reaching effects on maternal health and neonatal neurocognition, may outweigh any such presumptuous risks.^[5] Indeed, some other authors would argue that the development of civilizations has followed the iodized salt route!^[6]

In addition to this biological argument, another argument against the nudge hypothesis is that it may limit our personal choices and impinge on freedom. However, this too is debatable. At any level of choice, for instance, does an individual's freedom overcome public good? For instance, does an individual's freedom not to take iodized salt be more important than preventing possible mental retardation in society due to iodine deficiency? Clearly, these are complex questions. Some answers are more clear: an example is the nudge to ban smoking in public places such as airports. Here, the benefits are clearer because the prevention of secondhand smoke exposure in a crowded airport is more important than any individual's right to smoke anywhere that he/she pleases.

However, one of the most complex examples of the “nudge” in endocrinology has been the suggestion of a “sugar tax” or a “fat tax.” This has already been applied in some states of India and is hotly debated.^[7]

There is no doubt about the link between sugar-sweetened beverages and the occurrence of obesity and type 2 diabetes worldwide.^[8] What is in question, however, is the effectiveness of taxation of calorie-dense food on overall energy intake and obesity/type 2 diabetes prevalence rates.

A “sugar tax” or a “fat tax” has several pros and cons. We do not claim to be experts on economics and can view this problem mostly from a clinical doctors' perspective.

The cons of such a tax abound. To start with, people may not appreciate the authorities telling them what not to eat. Second, there is no established evidence that such taxation leads to reduced calorie consumption in India. This notion that taxation of calorie-dense food can limit energy intake is probably an assumption. Consider this situation, sugar and fat are taxed, but the populations, instead of cutting down sugar and fat, continue to buy the same quantities of these macronutrients at these higher prices. It is, remember, a matter of taste, pun intended. To make ends meet, however, what if this continued sugar/fat intake comes at the cost of reducing intake of healthy, fiber-rich foods? Unlikely though this sounds, it could happen! However, in Mexico, taxation has reduced the purchase of nonessential (read: sugar and junk food) household items.^[9] Another problem is that high-calorie taxation has been interpreted to mean an unhealthy Western diet. Beyond some restrictive definitions of junk food to mean pizzas and burgers, it is also instructive to consider that some Indian foods (such as, for instance, rasgullas

and samosas) are equally energy dense! Finally, will this tax lead to decreased occurrence of definitive outcomes such as type 2 diabetes or obesity? Modeling studies suggest so, but actual outcome studies are lacking in India.^[10]

Such taxation could have benefits too. The consumption of unhealthy foods might decrease, nudging persons toward more healthy choices as they are now relatively incentivized. Fast-food restaurants may now include healthier choices. The government can earn more money from the tax, which could be allotted to health-care sector reform.

However, viewing a problem from a purely Indian perspective, a sugar tax or a fat tax for all may not be the right nudge. India is a country with extreme wealth as well as poverty.^[11] High rates of obesity/diabetes coexist with high rates of malnutrition as well. By imposing a nationwide sugar/fat tax, relatively wealthy populations may reduce calorie intake. However, such a taxation may make food dearer for the poor and needy. Hence, any effort at calorie taxation should be need based and targeted to populations which need the nudge. If this taxation is applicable to the poor as well, the nudge may be a push or even a shove into more hunger.

This problem is being made more complex by the problem that type 2 diabetes and obesity are diseases of the relatively affluent, but they are increasing in the poor as well, with their energy intakes rapidly improving. Indeed, as India becomes wealthier, there is a danger that our problems may mimic the developed world. In the developed world, obesity and type 2 diabetes increasingly affect the poor and marginalized sectors, whereas the rich have greater access to fitness regimens and healthier, fiber-rich diets.^[12] Given that our country is moving toward economic prosperity, public health policy must reflect this dynamic, changing need and be agile to catch up to the changing requirements of India. Finally, obesity is not solely a disease of diet alone and physical activity and other biological factors (such as, for instance, endocrine disruptors) too play a role – it is important that all these must be addressed.^[13,14]

So, what's the final word? We suggest that having a sugar/fat tax for all may not be implementable. High-calorie foods being taxed for the wealthy people (including middle class) alone may be interpretable as discriminatory. In addition, it is possible that energy-dense calorie consumption may reduce only in lower income and urban households, leaving remainder populations still "susceptible" to junk food purchase; this was recently reported from Mexico. At present, urgent measures must focus on removing the scourge of undernutrition- and malnutrition-related deaths.^[15] This clinical outcome cannot be completely delinked from economic progress. Only when India is well and truly behind the specter of malnutrition, should sugar/fat taxation be considered. Meanwhile, regulators could focus on a subsidy for healthy, nutritious, and even organic food, making it available at low cost. Simultaneously, there should be increasing awareness of a healthy lifestyle and simultaneously focus on research into the biology and prevention of obesity/type 2 diabetes. The appearance of food, the environment of eating,

and the marketing of food in the media are all factors to be considered as improvable, as are proper planning of pavements and parks designed to improve physical activity. Hence, a spectrum of multifactorial intervention, of which a financial approach may be just a minor player, is the need of the hour.^[16]

In every challenge lies an opportunity. This is true here too. At the risk of sounding naively optimistic, we venture to suggest that the important community of endocrinologists in the country can be torchbearers in this change in the area of type 2 diabetes and obesity. By increasing awareness among public, through advocacy among policy experts and by educating general physicians and by collaborating with nutritionists, it is possible for us to make a change.

Obesity, hypertension, hyperlipidemia, type 2 diabetes, and cardiovascular diseases are among the most pressing public health problems of the day and are likely to increase with increasing economic prosperity. At the dawn of another new year, let us resolve to study, research, understand, and work on solutions to these problems that are unique to India's needs. In a spirit of collaboration, let us endocrinologists work with public health policy experts to bring forth a measurable change, or rather, a nudge toward better health of all Indians.

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