

Francisco Salvador Camacho Velasco  
Dr. sc. hum.

## **Tackling obesity using insights from behavioral economics in Mexico**

Fach/Einrichtung: Public Health  
Doktorvater: Prof. Dr. Andreas Ruppel

Obesity is a complex public health problem that can compromise the development of a whole country. In Mexico, obesity affects both adults and children of all ages and social strata, in both rural and urban areas. In addition, there exists the double burden of obesity and under-nutrition. Social programs aiming to tackle undernutrition, such as conditional cash transfer programs, may, however, indirectly promote obesity. The prognosis of such a scenario may be a constantly growing demand for health services together with constantly shrinking financial resources, thus undermining the sustainability of the health system. This situation creates the necessity to deepen the understanding of the problem to increase the effectiveness of tackling strategies.

The cause of obesity is currently stated as an energy imbalance between calories consumed and calories expended. However, this concept may lead to several misperceptions that possibly reduce the effectiveness public health strategies. Most anti-obesity programs, not only in Mexico but in the world, are based on this concept or focus at least on one of its elements. However, I discuss in this thesis evidence for an alternative concept considering the hormonal processes of fat production and accumulation. With this changed perspective, it becomes evident that the calorie imbalance may not be of prime relevance. In fact, the composition of the diet affects the hormonal balance involved in the body's capacity of self-regulating its fat production and accumulation, independently from the diet's calorie content. Thus, it may be more accurate to stress a hormonal imbalance as the cause of obesity. This concept would be of help to reducing stigma and responsibility of individuals, enhance anti-obesity programs, and increase accountability of the food industry in the obesity problem.

In this tenor, I outline why the food industry is a main stakeholder in the obesity problem. Especially through food marketing, industry can affect consumption, perceptions, food preferences, and even cultural beliefs. Behavioral economics can be of help to understand the way in which marketing influences relevant aspects of individual and societal behaviors of food-consumption. Children are most susceptible to marketing influence, and this is of relevance in the context of Mexico's

predominantly young population. Insights from behavioral economics may be used to create counter-marketing, aiming to induce consumption of healthier products, which can be a valuable tool for anti-obesity strategies.

To test the implementation of a counter-marketing strategy into a health campaign, I designed an intervention study to promote water consumption among children (aged 6 – 8) in Mexico using insights from behavioral economics as marketing tools. Under the auspices of a Senator and former Minister of Health, 3 schools in Mexico City and State of Mexico were involved. They included a control school, where no health education was given. A second school, where the children received a classical health-education talk without further activity. And in the third school, children received the same health education talk, but in addition were involved in an activity to promote water with various tastes. This activity represented a “nudge” in the sense of behavioral economics. The results of this intervention were measured over a 4-month observation period as potential changes in the Body-Mass-Index (BMI), which was corrected as Z-score to adjust for children’s age and height. Small changes were observed, with slight, but significant differences between the schools. The data suggests a positive difference between an intervention that considers, in the sense of behavioral economics, heuristics and biases within the environment, and an intervention that does not. A remarkable result of my study was the observation that the social environment in Mexico appears to be receptive to such a holistic approach. Stakeholders, such as schools and NGO’s, are willing to partner with experimenters to develop this kind of strategies.

By considering obesity as consequence of a hormonal imbalance affected by diet composition, and taking in consideration the way in which marketing affects consumption behaviors, my thesis opens the possibility to use an alternative frame work to attack the obesity epidemic, with a more holistic approach. This outcome has potential implications for designs of public health programs aiming to effectively control the obesity problem, and to avoid indirect promotion of obesity of future and current social programs. To this aim, I propose and discuss a strategy based on 3 steps, each applying internationally validated tools, to positively change an obesogenic environment by identifying an exposed population to obesogenic elements within its environment. I hope that my results may provide support for public decision-makers.