In Mexico, 75% of deaths are caused by chronic degenerative diseases. On one hand, infectious diseases have been attacked effectively worldwide, increasing life expectancy and changing the primary causes of death. Furthermore, changes in lifestyle have increased susceptibility to chronic degenerative diseases that occur at early ages.

The incidence of infectious diseases has been reduced because, in general, these are caused by a bacteria, virus or parasite. If disease transmission is interrupted, the disease can be prevented and, in some cases, eradicated. Chronic degenerative diseases such as cancer, diabetes, and cardiovascular, hepatic and renal diseases are not caused by a sole agent. These are complex diseases with a variety of factors involved in their development. For this reason traditional methods have had only limited results in prevention of chronic degenerative diseases.

It has recently been suggested that chronic degenerative diseases, which are considered noncommunicable, can spread socially. This does not imply that a person with cancer can spread the disease through some physical contact. What is contagious is not the disease, but the risk factors. The contagion is not physical but social. For example, if a person has certain habits that increase their propensity to develop diabetes, people who have social contact with that person (friends, family, companions) may adopt the same habits.

It has been statistically measured that this social influence may affect persons at three degrees of distance. This means that I affect my friends, my friend’s friends, and friends of friends of friends, even if I am not aware of it. It is estimated that, on average, we have 150 friends. Therefore, a person can potentially influence 150 friends + 22,500 (friends of friends, 150²) + 3,375,000 (friends of friends of friends, 150³) = a total of 3,397,650 persons. This does not mean that one person is the cause of the risk for millions of persons to develop a disease. Social habit propagation is probabilistic as is the spread of infectious agents. Moreover, in the propagation of social habits there is no single path that can be traced to an origin, as occurs in the case of infectious outbreaks. Because chronic degenerative diseases can be developed through multiple causes, it is not possible to isolate the various means of propagation. The number of causal pathways (social interactions) in a population is immense. If for one person there are more than three million possible routes of influence, for the entire population of Mexico we would be talking about more than three hundred fifty billion potential influences.

Given the complexity of social networks and their dynamics, it is unlikely that a centralized intervention would have the desired effect. This is because a traditional intervention cannot take into account all the possibilities that are generated in social networks. When designing a social intervention, we must take into account the complexity of the problem and the limitations of those who design the intervention.

To overcome these limitations, an alternative is to design interventions that adjust themselves to social dynamics, exploiting the same properties that generate the complexity. The same mechanisms and pathways that produce the social spread of chronic degenerative diseases can be used for their prevention. These “social vaccines” could be focused on restricting the spread of harmful behaviors or promoting the spread of healthy behaviors. In particular, well-known phenomena in psychology such as...
social learning, social facilitation, and public commitment could mediate the relationship between one’s own decisions and those of others. In other words, inherent social motivations can be used to increase the probability of adopting a particular healthy behavior, or to lessen the likelihood of adopting a harmful behavior. For example, it has been shown that people lose weight more effectively if they do so in a group situation.

However, much remains to be learned about the social propagation of behaviors. Testing of strategies using social vaccines carries multiple benefits. On the one hand, if they are successful, public health is improved. Furthermore, by studying individual behavior changes that depend on social interactions, we will obtain a better understanding of the mechanisms and pathways of social propagation of chronic degenerative diseases.

Social vaccines may be useful beyond the prevention of chronic degenerative diseases. Social influence is also a factor in the development of addiction. Although the dynamics of the propagation of addictions probably differs from that of diseases, social vaccines should be explored for their prevention. Similarly, these vaccines could reduce the incidence of addictions while improving our understanding of their spread.

References