

The effect of time delay and negligence in the analysis of behavioral change models of infectious disease dynamics *for human population*

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Most of the existing epidemiological models assume unchanged individual behavior during outbreaks of infectious diseases. In reality, public health education and informal communication can impact on perceptions of disease threat, which could result in influencing behavior of individuals to take any possible self-protective measures. On the other hand, all kinds of available protective measures may not be fully efficient in protecting individuals from getting infected by the disease. These two determinant factors influence the epidemiological dynamics of a disease. Moreover, it also gives a better information in how to intervene in controlling the disease. Cost of implementing combinations of the intervention mechanisms also play a role in combating the epidemics of a disease. Controlling the epidemics with minimum possible cost is the best alternative that a public health planner wants to know.

In this work a mathematical model for human disease epidemics that takes the human learning behavior into account will be presented. The model analyzes the effect of negligence (from the side of the population) and time lag (in disclosing the actual prevalence of the disease) in the dynamics and control of the disease. Using this information, the best possible combination of efforts in controlling a human disease epidemics will also be presented.

References

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