Mathematical Model of the Spread of Herpes Simplex Virus Type-2 in Heterosexual Relations with and without Condom Usage in a College Population

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Abstract : This paper uses mathematical modeling to show the spread of Herpes Simplex type-2 with and without the usage of condoms in a college population. The model uses four differential equations to calculate the data for the simulation. The dt increment used is one week. It also runs based on a fixated period. The period chosen was five years to represent time spent in college. The average age of the individual is 21, once again to represent the age of someone in college. In the total population, there are almost two times as many women who have Herpes Simplex Type-2 as men. Additionally, Herpes Simplex Type-2 does not have a known cure. The goal of the model is to show how condom usage affects women's chances of receiving the virus in the hope of being able to reduce the number of women infected. In the end, the model demonstrates that condoms offer significant protection to women from the virus. Since fewer women are infected with the virus when condoms are used, in turn, fewer males are infected. Since Herpes Simplex Type-2 affects the carrier for their whole life, a small decrease of infections could lead to large ramifications over time. Specifically, a small decrease of infections at a young age, such as college, could have a very big effect on the long-term number of people infected with the virus.

Keywords : college, condom, Herpes, mathematical modelling
Conference Title : ICSTD 2020 : International Conference on Sexually Transmitted Diseases
Conference Location : London, United Kingdom
Conference Dates : December 10-11, 2020