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On the sexual transmission dynamics of hepatitis B virus in China. (English) Zbl 1406.92650
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Summary: In a previous study we noticed that there might be co-infections of HBV and HIV by comparing incidence rates of these two diseases in China. The comparisons between the incidence data of HBV and sexually transmitted diseases (including AIDS, HIV, syphilis and gonorrhea) in China demonstrate that sexual transmission is an important route of spread of HBV in China. On the basis of this fact, in this paper we propose a compartmental model including under-aged children, male adults, and female adults. The effect of sexual transmission on the spread and prevalence of HBV in China is studied. The model is employed to simulate the HBV incidence data reported by the Chinese Center for Disease Control and Prevention for under-aged children, adult males, and adult females, respectively. The sensitivity analysis of the basic reproduction number indicates that it is important and crucial to increase the immunization rate for both under-aged children and adults in order to control the transmission of HBV in China. Our study suggests that effective control measures for hepatitis B in China include enhancing public education and awareness about hepatitis B virus, particularly about the fact that hepatitis B is a sexually transmitted disease, and increasing the immunization rate for both under-aged children and adults, especially for those groups of high risk.

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Keywords:

mathematical modeling; basic reproduction number; vaccination; sexual transmitted disease; sensitivity analysis

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