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| Abstract |  |
| This study aims to investigate the role of individuals with natural immunity in contributing to the overall spread of Marburg virus infection, a highly lethal human pathogen. Marburg virus was initially identified in 1967 during a significant outbreak in Marburg, Germany, and Belgrade, Serbia. Notably, there are currently no approved vaccines or treatments for Marburg virus infection due to its alarmingly high fatality rate. The study developed a mathematical model to better understand the transmission dynamics of Marburg virus disease (MVD), specifically focusing on the spread of infected individuals. Initial analysis employed established methods, evaluating factors such as the positive assessments, the basic reproduction number, and equilibrium point stability. This analytical approach provided valuable insights into MVD dynamics. Following this, numerical simulations were conducted to visually depict the outcomes derived from the analytical analysis. These simulations provided a more comprehensive understanding of the complex dynamics of MVD. Finally, this study presents a comprehensive analysis of Marburg virus transmission dynamics, shedding light on the impact of natural immunity on disease spread and emphasizing the significance of isolation strategies in mitigating the outbreak of this highly lethal pathogen. | |