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Abstract: In this paper, we formulate and study a mathematical model for the dynamics of jigger infestation incorporating public health education using systems of ordinary differential equations and computational simulations. The basic reproduction number RE is obtained and used to determine whether the disease breaks out in the population and results in an endemic equilibrium or dies out eventually corresponding to a disease-free equilibrium. We carried out an analysis of the model and established the conditions for the local and global stabilities of the disease-free and endemic equilibria points. Using the Lyapunov stability theory and LaSalle invariant principle, we found out that the disease-endemic equilibrium point is globally asymptotically stable if RE > 1 and unstable otherwise. Numerical simulations are performed to illustrate our theoretical predictions. Both the analytical and numerical results show public health education is a very effective control measure in eradicating jigger infestation in the endemic communities at large.

Keywords: basic reproduction number; global stability; jigger infestation; Lyapunov stability theory; public health education