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MATHEMATICAL ANALYSIS OF A TYPHOID MODEL WITH CARRIERS, DIRECT AND INDIRECT DISEASE TRANSMISSION

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Abstract

Typhoid fever continues to be an important cause of illness and death in developing countries where safe water supply, environmental sanitation and food hygiene are not optimal. An epidemiological model for direct and indirect transmission of typhoid is formulated and studied. The basic reproductive number is calculated and the global stability is investigated. Sensitivity analysis of the reproductive number suggests that indirect typhoid transmission has more impact on determining typhoid prevalence compared to direct transmission. The impact of successful treatment and the probability of a newly infected individual being a carrier is also explored by numerical simulations.

Key Words : *Mathematical model, Typhoid, Reproductive number,Stability,Sensitivity analysis.*

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