3rd International Conference on Influenza Research and Emerging Infectious Diseases

April 10-11, 2019 | Toronto, Canada

SCIENTIFIC TRACK | DAY 2

JOURNAL OF CLINICAL & CELLULAR IMMUNOLOGY 2019, VOLUME 10 | DOI: 10.4172/2155-9899-C2-069

Modeling the influence of climate change on schistosomiasis transmission dynamics

Tayo Alex Adekiya, Kazeem Oare Okosun and Abidemi Paul Kappo

¹University of Zululand, South Africa ²Vaal University of Technology, South Africa

Climate change has been suggested to elicit a significant impact on the interactions between pathogens and their hosts. Vector-borne diseases are predominantly sensitive to climatic factors because temperature variability can alter vector development rates, transmission dynamics, as well as cause alteration in their geographical distribution. Schistosomiasis ranked the second most widespread among neglected tropical diseases is caused by flatworms belonging to the genus Schistosoma. Symptoms of the parasitic infections include acute and chronic diseases, predisposition to cancer of the bladder, as well as pulmonary and portal hypertension and in extreme cases, death. This study employs a deterministic climate-based model using differential equations to investigate the impact of rainfall and temperature on the population dynamics of schistosomes over South Africa. Numerical simulations of the system were done using mathematical models to examine the effect of climate variability on the transmission dynamics of schistosomiasis. Results showed climate variability increases reproduction number of schistosomes and snails hence, schistosomiasis

transmission was suggested to be seasonal. Snails' reproduction was found to peak during summer and at the minimum during spring and autumn. Moreover, sensitivity analysis showed a reproductive number of schistosomes is more sensitive to the reproduction rate of snails and the probability of infections. Finally, the model used suggested future opportunity for modification and refinement for effective prediction of climate variability on the transmission dynamics of schistosomiasis.

Biography

Adekiya Tayo Alex currently works at the Department of Biochemistry and Microbiology, University of Zululand. Adekiya does research in Cancer Research, Biotechnology, molecular and structural biology and Bioinformatics. He has recently published three papers in the reputed journal.

adekiyatalex@gmail.com