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SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)
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SPATIAL MODELLING OF MALARIA SEVERITY ZONES IN OSOGBO AREA,NIGERIA.

Abstract

Malaria is an endemic vector borne disease with a high casualty rate. It has been recorded to be more severe in the southwestern part of Nigeria. This study was carried out to determine the spatial extent of malaria risk in Oshogbo metropolis. Multi criteria decision analysis (MCDA) and weighted overlay of the selected risk factors were carried out after a pairwise matrix of the factors was done, this resulted in a hazard map. The Land Use Land Cover map of the study area was created alongside an accessibility index map showing distance from health facility, a multiplication of these outputs; Hazard map, Accessibility index map and Land Use Land cover map using the Analytical Hierarchical Process (AHP) extension and raster calculator in ARCGIS 10.2 to produce final malaria risk map. The result shows the risk extent of malaria with estimates of 9.26%, 35.18%, 18.51%, 20.37% and 16.6% of the area subjected to very high, high, moderate, low and very low malaria risk areas respectively. Objectives:the study was guided by Land Use Land Cover map of the study area which was created alongside an accessibility index map showing distance from health facilities, a multiplication of these outputs; Hazard map, Accessibility index map using Analytical Hierarchical Process (AHP) extension and raster calculator in ARCGIS 10.2 to produce final malaria risk map. Methodology: A principal component analysis of the satellite image was carried out in order to determine the correlation and covariance of the bands. This was done in the build up to selecting the bands for colour compositing. After this, the image was geo-corrected, filtered and enhanced in order to obtain useful input for image classification. The Malaria risk analysis of the study area was done using the following general risk equation: Risk = (Elements at risk)*(Hazard)*(Vulnerability) Results: Based on the results of this study, Oshogbo can be considered as a highly epidemic prone area. This stems from the fact that all the environmental and climatic factors of Oshogbo considered in this study meets all the criteria for high malaria risk (temperature lies within thriving degree for malaria, average rainfall is high, slopes are gentle, presence of dense vegetation etc. and water body flowing through the area) Conclusion: Malaria risk is high across Osogbo. This agrees with the malaria report of the WHO that classifies the south western part of Nigeria as a high risk zone for malaria infection.