Malaria Risk Assessment Using GIS a Case Study of Adama District, Ethiopia

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Key words: Geoinformation/GI;

SUMMARY
Author: Kibrom Hailu Tafere E-mail: kibrom.hailu23@gmail.com Position: Lecturer, Adama Science and Technology University, Ethiopia General Secretary, Ethiopian Surveying Professional Association Bachelor degree, Surveying technology MSc,Geodesy and Geomatics Engineering Title of the paper: Malaria Risk Assessment Using GIS a case study of Adama District, Ethhiopia Abstract Malaria as one of the parasitic diseases, caused by plasmodium was discovered in 1880. Taking head of malaria infection and transmission as a problem gap due to lack of geo-referenced spatial information to assess malaria hazard and risk level for administration units was observed in Adama district. Therefore, The objective of this study was to assess malaria risk areas in Adama District using GIS. The most important determinate factors used to analyze malaria risk and hazard were population density and slope. The multi-criteria evaluation of malaria risk assessment has been studied based on Risk Computation Model developed by Shook. This approach uses three parameters (hazard, vulnerability, and element at risk) to predict malaria risk. These three parameters are combined together by assigning some rescaling weights 1, 2, 3, 4, and 5 to the three parameters. These numeric weights reflects the relative contribution of each parameter to malaria risk: weighting factors 1, 2, 3, 4, and 5 corresponds to very low, low, moderate, high, and very high respectively. Low hazardous areas (78.91ha/0.1% of the area) were categorized to be less in terms of malaria prevalence due to soil and slope factors. High hazardous areas (66017.49ha/84.87% of the area) were categorized to be high to very high hazardous level due to soil and Agro ecology zone factors. The result of Risk Assessment show that areas with low, moderate and high malaria risk were (53641.75ha/68.97%), (22951.41ha/29.51%), and (1136.51ha/1.46%) respectively. In terms of malaria hazard and risk levels, 2 kebeles were found to be non-hazardous and the rest 39 kebeles were hazardous and 1 Kebele was found to be at higher risk, 11 kebeles at moderate risk and the rest 29 kebeles at low risk of malaria. Areas in the district with steep slope are found to be less hazardous due to reduction of the suitability of the areas for the breeding of mosquito. Besides, the area with higher population density in Wonji Gefersa Town compared to other neighboring kebeles increase the risk for malaria infection. Key Words: Malaria, Vulnerability, Element at Risk, Hazard, Risk, GIS, Model, Prevalence

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