Abiodun Adeola, Occup Med Health Aff 2017, 5:2(Suppl)
DOI: 10.4172/2329-6879-C1-030

Abiodun Adeola

South African weather service, South Africa

CLIMATIC VARIABLES AND THE RECENT SPIKE IN MALARIA MORBIDITY AND MORTALITY IN MUTALE MUNICIPALITY, SOUTH AFRICA: AN 18-YEAR DATA ANALYSIS

Statement of the Problem: The malaria control program community of South Africa, received a seemly blow as an awakening call on the reality of the country's target of year 2018 to eliminate malaria. The north-eastern part of the country comprising of Limpopo, Mpumalanga and KwaZulu-Natal have recorded a sudden rise in the number of malaria morbidity and mortality in the current malaria season. This paper aims at retrospectively and prospectively exploring the impact of climate variability among other factors driving the persistent transmission of malaria in Mutale, Limpopo Province of South Africa.

Methodology & Theoretical Orientation: A time series and multivariate analysis was performed on monthly total rainfall, monthly mean maximum and minimum temperature and monthly case data of malaria in Mutale municipality for the period of 2000 to 2017. The Rossby centre regional atmospheric model, (RCA4 RCM) was used to perform climate analysis and projections for rainfall and near-surface (2m) temperature.

Findings: The time series analysis indicated that an average of 629.5mm of rainfall was received over the period of study. The rainfall has an annual variation of about 0.46%. Both maximum and minimum temperature showed a positive increasing trend in their mean. Spearman's correlation analysis indicated that all climatic variables are positively correlated with malaria morbidity. Further analysis revealed that total monthly rainfall and monthly minimum temperature, with one month lagged effect were the most significant climatic variable influencing malaria transmission. More particularly, malaria morbidity showed a strong relationship with episode of rainfall above 800 mm and above 5-year running mean of rainfall. Furthermore, the RCA4 model indicated that, annual rainfall in the province will be 0% - 15% drier (below average) and seasonally, the western part of the province will be 5% wetter in December – February (DJF) and 5% dryer in the eastern part in March – May (MAM), June – August (JJA) and <20% dryer in September – November (SON). Near-surface temperature is projected to increase between +1.5°C to +2.5°C in 29-year period.

Conclusion & Significance: Adequate understanding of climatic variables dynamics retrospectively and prospectively is imperative in seeking answers to malaria morbidity among other factors, particularly in the wake of the sudden spike of the disease in the province.

Biography

Abiodun Adeola works as a lead scientist: climate change and variability in the research unit of South African Weather Service. His particular research interest is climate, climate change and variability impacts on heath. He is proficient in the application of remote sensing and geographic information system in providing solutions to environmental health problems through climate change analysis and modelling. He has a strong passion in improving the health and wellbeing. As part of his PhD research, he has developed a SARIMA model using remotely derived environmental variables to predict malaria cases in South Africa. Article of the model is under review with Eco Health journal. He is currently a leading member of a research collaboration group on Developing an integrated modeling and surveillance system based on climate, land use, and malaria transmission dynamics in the eastern Limpopo river valley, South Africa.

abiodun.adeola@weathersa.co.za