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Climatic determinants of malaria in view of climate change in Mizoram, Northeast India

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Malaria transmission dynamics is affected by climatic determinants like temperature, rainfall and Relative Humidity (RH). These conditions affect the breeding and survival of mosquito vector and extrinsic incubation period of malaria parasite. Rainfall and malaria has been studied in detail in most parts of India including Assam from Northeastern part of India, but there is almost no information on climatic determinants of malaria from Mizoram one of the states in northeast India which reports highest malaria cases. Northeastern states are vulnerable to climate change and are also highly endemic for malaria. In view of this, a study was undertaken to find out the climatic determinants affecting the malaria transmission in Aizwal west and Kolasib district of Mizoram. Analysis of retrospective data of monthly incidence of malaria with corresponding temperature and rainfall from 2000 to 2009 was undertaken. The analysis reveals that temperature and rainfall are significantly related with seasonal upsurge of malaria. The r value for P.falciparum Vs temperature; P.falciparum Vs Rainfall were found as 0.55 and 0.76 respectively indicating strong relationship between climatic factors and malaria. The analysis of retrospective data of temperature and Relative Humidity from A1B scenario of PR…CIS model developed by IITM, Pune India for the year 1990 revealed that in Aizwal West the transmission suitability was for nine months while in Kolasib it was for ten months. When the current transmission window of malaria was determined based on minimum required monthly temperature and Relative Humidity using meteorological data from the weather stations for the year 2009, malaria transmission is open for all the 12 months in both the districts. The seasonality of malaria incidence particularly for P.falciparium corroborates the malaria transmission months. The study reveals that climate change has started affecting the transmission intensity of malaria in Mizoram warranting suitable adaptation measures.