Vulnerability to epidemic malaria in the highlands of Lake Victoria basin: the role of climate change/variability, hydrology and socio-economic factors

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Abstract

Endemic malaria in most of the hot and humid African climates is the leading cause of morbidity and mortality. In the last twenty or so years the incidence of malaria has been aggravated by the resurgence of highland malaria epidemics which hitherto had been rare. A close association between malaria epidemics and climate variability has been reported but not universally accepted. Similarly, the relationship between climate variability, intensity of disease mortality and morbidity coupled with socio-economic factors has been mooted. Analyses of past climate (temperature and precipitation), hydrological and health data (1961–2001), and socio-economics status of communities from the East African highlands confirm the link between climate variability and the incidence and severity of malaria epidemics. The communities in the highlands that have had less exposure to malaria are more vulnerable than their counterparts in the lowlands due to lack of clinical immunity. However, the vulnerability of human health to climate variability is influenced by the coping and adaptive capacities of an individual or community. Surveys conducted among three communities in the East African highlands reveal that the interplay of poverty and other socio-economic variables have intensified the vulnerability of these communities to the impacts of malaria.

Keywords

Lake Victoria Basin; Malaria Epidemic; East African Highland; Adaptive Capacity; Clinical; Immunity; African Climate; Endemic Malaria; Socio-economic Factor; Past Climate; Magnetic Field