As malaria infection becomes less intense, more seasonal and ultimately unstable or epidemic the overall life threatening disease risk is spread across a much wider age range. Malaria epidemics are being reported more frequently in the Kenyan highlands and semi-arid areas, which experience low-moderate rainfall with high inter-annual variability. Recent studies suggest that climatic factors may play an important role in initiating epidemics particularly rainfall.

A retrospective study was carried out in Narok District and St. Joseph Kilgoris mission hospitals among hospitalized patients to determine the changing epidemiology of clinical malaria between 1980 and 1999. The study set out to determine the seasonal pattern of clinical malaria in relation to climatic variables, identify the malaria risk and estimate changes in case fatality rates. Monthly data were collected on all admissions, all deaths, malaria admissions and deaths due to malaria. Meteorological data on monthly mean rainfall, temperature, and relative humidity were extracted for the same period from 1980 to 1999. Data analysis was conducted using statistical package for social sciences (SPSS) version 8.0. One way ANOVA, Turkey’s test, time series; Paired samples correlation and regression analyses were used for the analysis. The results showed that 52,166 admissions were recorded in Narok District of which 22,428 (43%) were children below 15 years. At the same time 9,006 (17.4%) were malaria admissions of which 3,059 (34%) were children. The proportion of malaria admissions rose from 8.8% between 1980 and 1984 to 28.9% between 1995 and 1999, which was statistically significant (b= 847 mean annual monthly total malaria admission/year, r$^2$= 238, p= .029). Although case fatality rose from 1.4% in 1980 to 6.7% in 1998 this was not significant. In Transmara District 114,946 admissions were recorded of which 62,771 (54.6%) were children below 15 years. Similarly 44,954 (39.1%) were malaria admissions of which 30,891 (68.7%) were children. The proportion of admissions due to malaria rose from 21.6% between 1980 and 1984 to 53.8% between 1995 and 1999 which was statistically significant (b=10.332 (mean annual monthly total malaria admission/year), r$^2$=251, p=.024). Case fatality rose from 4.9% between 1980 and 1984 to 6.2% between 1995 to 1999, but this was not significant. There was no statistical significant change in climatic variables in Narok and Transmara Districts although statistically, rainfall in Transmara District showed a significant rise (b=2.942 (mm/year), r$^2$=268, p=0.019). Regression models did not show any relationship between the number of malaria admissions and climatic variables. The results of this study may be useful in planning; implementation, monitoring and evaluation of malaria control strategies and also serve as guide in the provision of accurate information, education, and communication about malaria to residence for effective community participation.