Abstract

The purpose of this study was to investigate the influence of demographic, socioeconomic and ecological factors in malaria transmission in the most important residual transmission focus in Mexico, located in the state of Oaxaca. Material and Methods. The extension of the focus was determined by a spatial and time analysis of the distribution of malaria cases in the state between 1998 and 1999 using a Geographical Information System. A malaria transmission intensity index (MTII) was constructed based on the total number of cases during the study period and the duration and frequency of transmission outbreaks within the villages. The relationship between local determinants and malaria transmission intensity was investigated using multinomial and ordered logistic models. Results. The distribution of villages according to their MTII was: 325 high, 341 medium, 142 low and 717 with no transmission. Localities of high MTII were associated with areas having a tropical climate with summer rains and low water evaporation. Most high MTII villages were located in elevations between 200 and 500 m above sea level, in the area around Pochutla City. The amount of temporary streams in the neighborhood of localities had a highly significant positive association with the MTII. Distance to roads was only significant in the high malaria MTII stratum. Conclusions. The main factors determining malaria transmission in the focus are related to good conditions for the breeding of mosquito vectors. The existence of short-range population movements around Pochutla, the main economically active city in the area, indicates the necessity to implement a system of epidemiological surveillance to halt the dispersion of new outbreaks.

Keywords
malaria; transmission; determinants; GIS; Mexico