

ABSTRACT

Spatial malaria distribution and, insecticide-treated nets and artemisinin-based combination therapy usage among children under-five years in Cameroon, 2018

Background

Malaria is highly endemic in Cameroon with children under five years being the most vulnerable despite the widespread provision of preventative and curative interventions. These include, insecticide-treated nets (ITN) and artemisinin-based combination therapy (ACT) respectively. This study examined the spatial distribution of malaria prevalence, ITN and ACT use among children under five years in Cameroon.

Methods

A cross-sectional design was used to study malaria data from the 2018 Cameroon Demographic and Health survey. The observed prevalence, hot and cold spots, and spatial autocorrelations among Cameroon's 58-second administrative divisions were determined. Multilevel logistic regression modelling was used to determine the relationship between malaria and the use of ITN, ACT and the combined usage of ITN and ACT, adjusting for sociodemographic and climatic factors. Conditional autoregressive modelling was used to adjust for spatial random effects and to map predicted malaria risk

Results

Of the 4,733 children in the study, 1,161 (24%) had malaria in 2018. The observed malaria prevalence was highest in Mayo-Louti, Faro-et-Deo, Djerem, Haute-Sanaga, Nyong-et-Kelle, Lekie, Nyong-et-Mfoumou, Mbam-et-Inoubou, Nkam, Boumba-et-Ngoko and Vallee-du-Ntem divisions. There was a significant spatial autocorrelation (Moran's I 0.457; $p < 0.00001$) indicating

a clustering pattern of malaria infections. Malaria hot spots were identified in some divisions of the Centre, East, Adamawa and South regions of Cameroon. ITN usage was 58% (n=2,824) and was highest in the divisions of Far-north and North regions. ACT usage among children with fever two weeks before survey was low (n=48, 5.5%). ITN and ACT use were not significant but the odds of malaria were increased for some children who neither used any of the two interventions (AOR 2.30, 95%CI 1.09, 4.84). Increasing age, history of fever, and living in rural areas significantly increased the odds of malaria (AOR 2.97, CI 2.18, 4.03; AOR 2.64, CI 2.03, 3.43 and AOR 1.86, CI 1.32, 2.63 respectively). Conversely, Altitude, tertiary levels of maternal education and higher socioeconomic status significantly lowered the odds (AOR 0.16, CI 0.09, 0.29; AOR 0.48, CI 0.26, 0.90 and AOR 0.29, CI 0.15, 0.55 respectively). High malaria risk was predicted in some divisions of the Far-North, Adamawa and Centre regions. Whereas, malaria risk was predicted to be low in the most division of the northern and coastal regions. Climatic and environmental factors had no significant effect

Conclusion

High malaria prevalence among children under five years in 2018 indicates a need for targeted intervention measures, particularly in the Center, East and South regions. Conjugated efforts is required to increase the coverage and use of ITN and ACT in order to effectively reduce prevalence and transmission as these provide a synergetic effect