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Factors associated with the use of insecticide-treated nets among children in Malawi, 2017

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Abstract

Malaria is a mosquito vector-borne disease and remains a major public health concern globally especially in Africa. Malawi, like some sub-Saharan African countries, has endemic malaria with an estimated 6 million episodes per year. In Malawi, the burden of malaria is particularly high in children under-five years of age. In 2019, 460/1000 confirmed cases of malaria in Malawi were children under-five years. The primary vector control method in Malawi is the use of insecticide-treated nets (ITN). The National Malaria Control Program (NMCP) set a target of 90% of children under-five years sleeping in an ITN by the year 2022. In 2017, after a series of universal mass ITN distribution campaigns, ITN utilization among children under-five was at 68%. This study aimed to assess factors associated with the use of ITNs among children under-five years of age in households that owned at least one ITN in Malawi to contribute to the available body of knowledge toward achieving the NMCP goal.

We conducted a cross-sectional study using secondary data from a nationally representative survey, Malawi Malaria Indicator Survey-2017. The study population was children under-five years of age in Malawi in 2017 who slept in a household that owned at least an ITN the night before data collection for the parent survey. Firstly, we assessed the distribution of participants by sociodemographic characteristics by calculating proportions for categorical variables and mean and range for continuous variables. Then we fitted univariable logistic regression models with ITN use among children under-five years and each of the child, maternal, and household characteristics. The variables that yielded a p-value ≤ 0.15, in the univariable logistics analysis were included in a multivariable logistic regression model. The main exposure variable was the ratio of household members to ITN. This variable measures household access to bed-nets.

In the multivariable logistic regression analysis, we found that child's age, child's relationship to household head, the ratio of household members to ITN, and alternative use of ITNs at the household level were significant predictors of ITNuse among under-five children. For each year increase in a child's (<5 years) age, his/her odds of sleeping under an ITN decreased by 20%, aOR= 0.8 (95% CI 0.74-0.90). Being a son/daughter/grandchild of the head of household increased the odds of an under-five child sleeping under an ITN by two times compared to being distantly related (nephew/niece) or having no blood relation to the household head (aOR=2.1, CI 1.001-4.32). A unit increase in the ratio of household members to an ITN caused a corresponding 25% decrease in the odds of a child using a bed-net, aOR=0.75 (CI 0.68-0.84. Finally, we found that children who resided in households that reported no alternative use of ITNs(e.g. fishing, windows, gardening, caging livestock, fence, and selling of the ITN for money) had higher odds of sleeping under an ITN than those from households that reported alternative use of bed-nets, aOR=1.75 (CI, 1.09-2.79).

Our study has shown that the ratio of household members to an ITN (household access) is an important factor in ITN use among children under-five years. Increasing household access to ITNs improves the odds of a child using an ITN. However, achieving a good level of access to ITNs by children may be impeded by alternative competing use of the ITNs at the household level. The government of Malawi should identify means to off-set this to improve the availability of the ITN at the household level.