Trends in malaria morbidity and mortality rates in Uganda: A four-year retrospective study

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Approximately 40% of outpatient attendance and over 20% of hospital admissions in Uganda are reported as malaria. The US President Malaria Initiative's Malaria Action Program for Districts (MAPD) project supports the reduction of malaria morbidity and mortality through improving the implementation of core interventions, including service delivery improvements through clinical and mortality audits, an approach not widely adopted in Uganda. This study compared severe morbidity and mortality in project and non-project districts.

Health facility data collected through the health management information system between January 2016 and December 2019 were analyzed. Three outcomes were assessed: proportion of confirmed malaria cases classified as severe, proportion of malaria deaths in relation to malaria cases, and malaria mortality (malaria deaths per 100,000 population). 52 MAPD districts were pooled and compared to 84 pooled non-project districts, by year. A difference in difference (DID) estimator in mortality was computed to study the differential effect.

The proportion of confirmed malaria cases classified as severe was similar (range: 3 – 5%) in both areas from 2016 to 2018. However, in 2019 - a period with frequent malaria upsurges especially in MAPD districts, this increased to 12% in the project area, but remained 5% in the comparator. The proportion of malaria-related deaths in the project area declined from 10% in 2016 to 4% in 2019, while in the comparator area it declined from 9% to 5%. Malaria mortality, however, decreased steadily from 16/100,000 in 2016 to 14 in 2017, to 7 in 2018, to 4 in 2019 in MAPD districts, whereas in the comparator area mortality dropped from 10 in 2016 to 4 in 2017, remained 4 in 2018, and then rose to 6 in 2019. This resulted in DID estimator for mortality of 2.35 (95%CI 2.24, 2.47). There were no statistically significant differences in data reporting rates between the two areas over time.

This study suggests that MAPD districts were more likely to reduce malaria mortality than non-MAPD districts, despite malaria upsurges. Project interventions and implementation models may minimize mortality nationwide.