



**Karolinska
Institutet**

Department of Public Health Sciences

**Targeting malaria elimination:
An assessment of malaria control
interventions for children in Zanzibar**

ACADEMIC DISSERTATION

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by

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ABSTRACT

Background: After decades of neglect, a renewed global focus on malaria was initiated in the 90s, followed by global financial support in the early 2000s. Zanzibar has been in the forefront of these renewed efforts: Case management and vector-control interventions have been implemented and scaled-up rapidly, resulting in markedly reduced malaria transmission and the targeting of malaria elimination.

Aim: The overall aim of this thesis was to assess caretakers' uptake of malaria control interventions for under-five children in Zanzibar, an area where malaria transmission has rapidly decreased.

Methods: In Study I, a follow-up survey of 210 caretakers was performed to assess caretaker adherence to Artemisinin-based Combination Therapies (ACTs), where caretakers were interviewed in their homes four days after receiving the three-day treatment for their children. In Studies II & III, an assessment of the effective coverage of vector control interventions was carried out in two community-based surveys in 2006 and 2009, with 509 and 560 caretakers, respectively. Both surveys were done in North A and Micheweni districts. In the 2006 survey, the system effectiveness of a targeted free mass distribution of long-lasting insecticidal nets (LLINs) was also assessed, and in the 2009 survey, caretaker perceptions of the malaria situation in Zanzibar and of vector control interventions, were evaluated. Perceptions of malaria and vector control interventions were further explored by conducting in-depth interviews with 19 caretakers (Study IV).

Results: Moderate adherence of 77% to Artesunate-Amodiaquine (AsAq) was documented, and was mostly due to misunderstanding or forgetting the correct dose regimen. Factors associated with adherence were caretaker's education exceeding 7 years and receiving the exact number of pills to complete the treatment regimen, while administering the first dose at the health facility resulted in complete adherence (I). System effectiveness of the targeted mass distribution had increased in the distribution scale-up in North A district as compared to the pilot distribution in Micheweni. This resulted in high (87%) and equitable effective coverage of LLINs in under-five children in the North A district. Effective coverage was associated with receiving an LLIN and thinking that LLINs were better than conventional nets (II). Effective coverage of LLINs in under-fives in the 2009 survey was also equitable and relatively high (70%) following an un-targeted mass distribution, while effective coverage of IRS was as high as 95%, resulting in almost perfect effective coverage (98%) of at least one vector control intervention (III). Seasonality was found to interrupt continuous adherence to bed-nets (III & IV). Low risk perceptions of malaria (III & IV) were not significantly associated with effective coverage (III), although the higher perceived risk for children is in line with the finding that children were prioritized for use of bed-nets (III & IV). Vector control interventions were generally well accepted (II-IV), and caretakers appreciated the importance of their continued use as malaria further declines (III).

Conclusions: Findings of this thesis indicate that caretaker uptake of malaria control interventions for children remains high in Zanzibar in the face of declining malaria burden. ACTs, freely provided at public health facilities, were relatively well adhered to, and the high effective coverage of IRS, together with satisfactory effective coverage of LLINs, provided an almost perfect effective coverage of vector control interventions. This high effective coverage elevates the prospects of achieving malaria elimination in Zanzibar.

Key words: Zanzibar; malaria; elimination; bed-nets; long-lasting insecticidal nets; LLIN; indoor-residual spraying; IRS; effective coverage; adherence; access; artesunate; amodiaquine; artemisinin-based combination therapies; ACT