



# Replicating the Association between Indoor Residual Spraying Acceptance and Malaria Parasitaemia in Under-Fives within Spray-Averse Communities of Limpopo Province, South Africa

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## Abstract

Indoor residual spraying (IRS) is a cornerstone of malaria control in South Africa. Its effectiveness may be compromised in communities with documented aversion to the intervention. A prior study in Limpopo Province suggested a protective association between IRS acceptance and malaria parasitaemia in children under five, requiring validation in similar settings. This replication study aimed to verify the reported association between household IRS acceptance and the prevalence of malaria parasitaemia in children under five within communities in Limpopo Province known for resistance to spraying programmes. A cross-sectional household survey was conducted in selected spray-averse communities. Caregivers of children under five were interviewed regarding IRS acceptance in the most recent spraying cycle. Blood samples were collected via finger-prick for malaria parasite detection using rapid diagnostic tests. The association was analysed using logistic regression, controlling for confounders including bed net use and household location. The study replicated the key finding. Households that accepted IRS had 60% lower odds of having a child under five with malaria parasitaemia compared to households that refused spraying (adjusted odds ratio 0.40, 95% CI 0.25–0.62). The overall parasite prevalence in the sample was 8.7%. The replication confirms a strong, statistically significant protective association between IRS acceptance and reduced malaria parasitaemia in under-fives within spray-averse communities. This supports the value of IRS as an intervention in resistant areas. Malaria control programmes should intensify community engagement and develop tailored communication strategies to address specific concerns leading to spray aversion. Further research should investigate the roots of resistance to inform more effective community sensitisation. malaria, indoor residual spraying, replication study, community acceptance, parasitaemia, under-fives, South Africa. This study provides replicated evidence on the association between IRS acceptance and malaria outcomes in a high-risk, resistant community context, offering a firmer basis for programme strategy.

**Keywords:** *Malaria control, Indoor residual spraying, Parasitaemia, Community acceptance, Southern Africa, Replication study, Under-fives*



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