

**SOCIODEMOGRAPHIC AND ECOLOGICAL FACTORS ASSOCIATED
WITH MALARIA AND MALARIA RECURRENCE RISK IN CHILDREN IN
MSAMBWENI, KWALE COUNTY, KENYA**

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AWARD OF MASTER IN PUBLIC HEALTH OF TECHNICAL UNIVERSITY
OF MOMBASA.**

DECLARATION

This thesis is my original work and has not been presented for a degree award in any other university.

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DEDICATION

This thesis is dedicated to my dear father, who always joked that this degree was for him, and for all the emotional and financial assistance.

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ABBREVIATIONS AND ACRONYMS

PCR	Polymerase Chain Reaction
RDT	Rapid Diagnostic Test
WHO	World Health Organization
ACT	Artemisinin-based combination therapies
ITN	Insecticide-treated nets
IRS	Indoor residual spraying
COR	Crude odds ratio
AUC	Area under the curve
CI	Confidential interval
aOR	Adjusted Odds ratio
rRNA	Ribosomal ribonucleic acid
pLDH	Lactate dehydrogenase
HRP-2	Histidine-rich protein 2
sSA	Sub Saharan Africa
WASH	Water, Sanitation and Hygiene

DEFINITION OF TERMS

Earth or dirt floor

Floors with compacted natural soil

Improved floor

Floors with tiles, cement or any other artificial material

ABSTRACT

Malaria remains a significant public health issue, particularly in regions where poverty and inadequate healthcare infrastructure intersect. This study aimed to evaluate the sociodemographic and ecological factors affecting malaria risk in Msambweni, Kwale County, Kenya. Additionally, it examined the spatial distribution of malarial fevers in the region. Data was gathered from a cohort of children (aged 1 to 18 years) at Msambweni County Referral Hospital between 2014 and 2018, supplemented by a nested case-control study to analyse malaria fever patterns. The nested case-control data was collected through caregiver or guardian interviews and direct observation. Malaria diagnosis was conducted using microscopy, with recurrent malaria defined as at least two confirmed infections during the study period. Overall, 2610 acute febrile illness visits were made by the 2371 children. Of the 2610 visits, 40.6% (1059/2610) had malaria parasitemia. Most of the participants (83%, 2169/2371) visited the hospital once; 174 children visited the hospital twice, 19 visited the hospital thrice and nine visited the hospital four times. Of the 2371 children, 60 (2.5%, 95%CI 1.9–3.2) had recurrence of malaria; 51, 8 and 1 children had one, two and three recurrent malaria episodes, respectively. Recurrent malaria was linked to poor-quality housing, especially homes with dirt floors and proximity to mosquito breeding sites like rice fields. Malaria risk increased with the child's age, lower maternal education, and poor water, sanitation, and hygiene (WASH) conditions. Children from households with poor ventilation and limited windows were also at higher risk. Targeted mosquito control, particularly near rice fields, and the use of insecticide-treated nets should be intensified. Simple house improvements, such as window screens and better roofing, are recommended to complement existing malaria control measures. The shift in malaria risk towards school-aged children suggests the need to expand interventions to target this group. Investments in housing, education, and WASH infrastructure are essential to enhance malaria control efforts in the region and support current malaria interventions.

Keywords *Plasmodium falciparum*, malaria risk, malaria recurrence and intervention.