

Spatiotemporal Patterns of Schistosomiasis Prevalence in Kenya: Implications for Targeted Control Strategies

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1. BACKGROUND

Schistosomiasis remains a highly focal parasitic disease in Kenya, closely linked to freshwater ecosystems.

Analysis of over 2,000 georeferenced survey points highlights marked spatial heterogeneity, with:

- 60–70% of sites showing low prevalence (<10%)
- 20–30% moderate prevalence (10–49%)
- 5–10% high-prevalence hotspots (≥50%)

High-burden areas are concentrated in western Kenya around Lake Victoria and in coastal regions, while most central and northern regions remain largely non-endemic.

2. OBJECTIVES

- ✓ Determine ward-level prevalence of schistosomiasis
- ✓ Assess spatial heterogeneity
- ✓ Generate evidence to guide stratified interventions and mass drug administration (MDA) planning

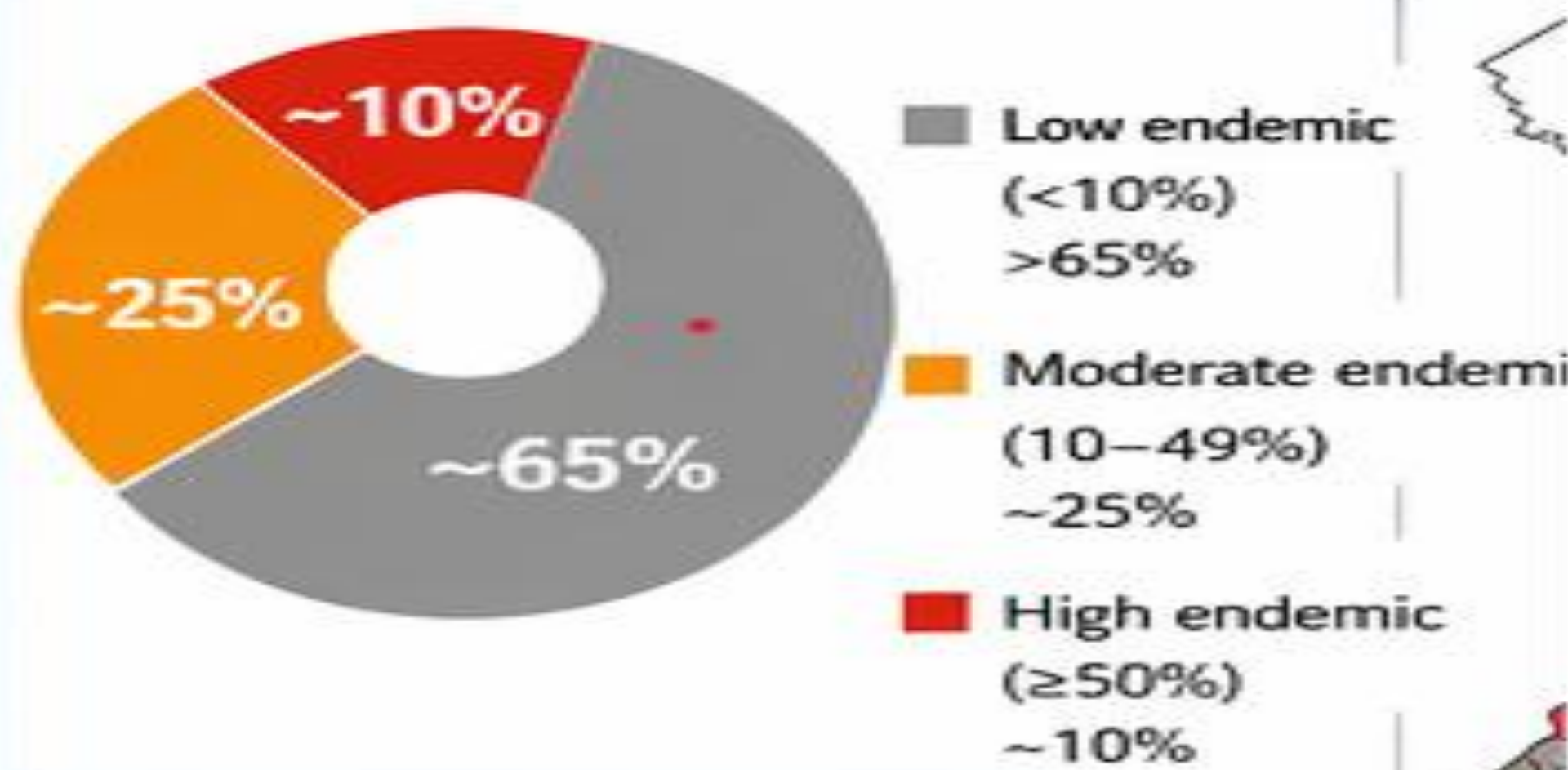
METHODOLOGY: SPATIAL ANALYSIS OF GEOREFERENCED PREVALENCE DATA

STUDY AREA: WESTERN, LAKE AND COASTAL KENYA

STUDY DESIGN AND SAMPLING: Granular mapping surveys conducted between 2020 and 2023 collected georeferenced prevalence data across Kenya, targeting *Schistosoma mansoni* and *Schistosoma haematobium*. Data were aggregated at sub-county level to classify endemicity, and spatial analyses compared point-level and aggregated estimates to identify transmission patterns and micro-geographic variability.

4. RESULTS

Endemicity Distribution (Sub-county level)



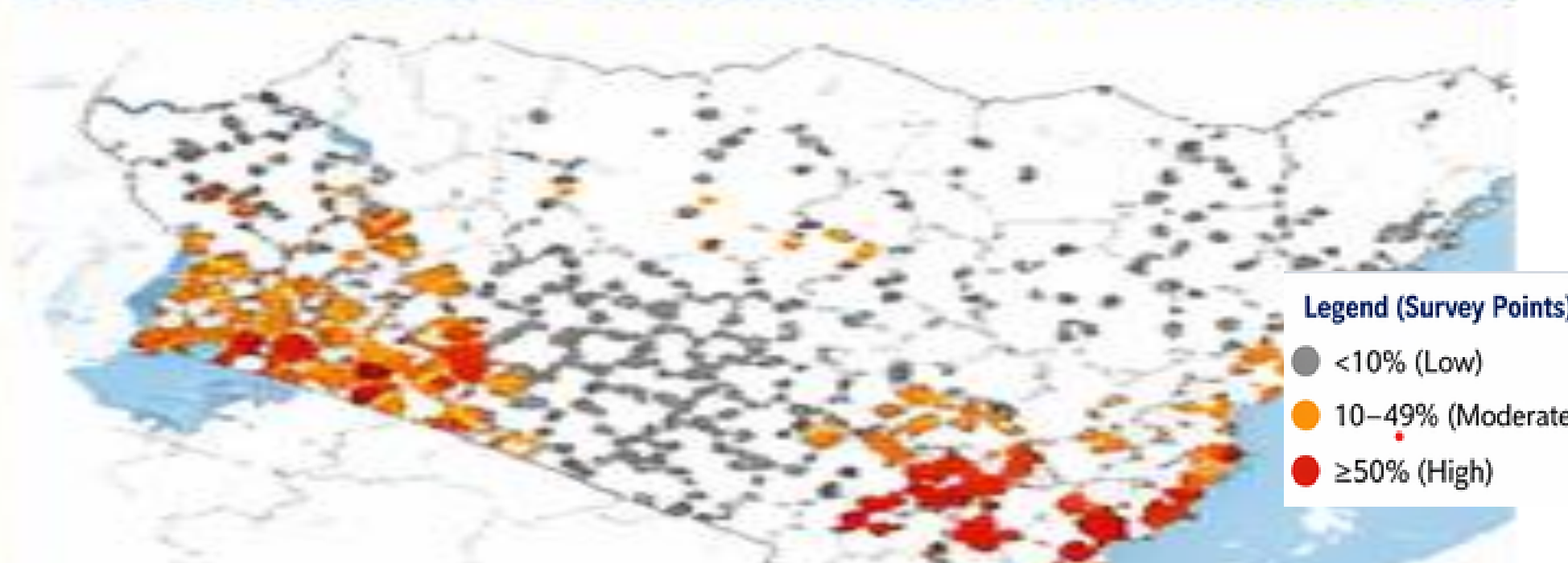
High-Transmission Clusters

- Western Kenya**
 Kisumu, Homa Bay, Siaya, Migori, Busia, Kakamega, Vihiga
- Coastal Kenya**
 Kilifi, Kwale, Taita Taveta, Lamu, and parts of Mombasa

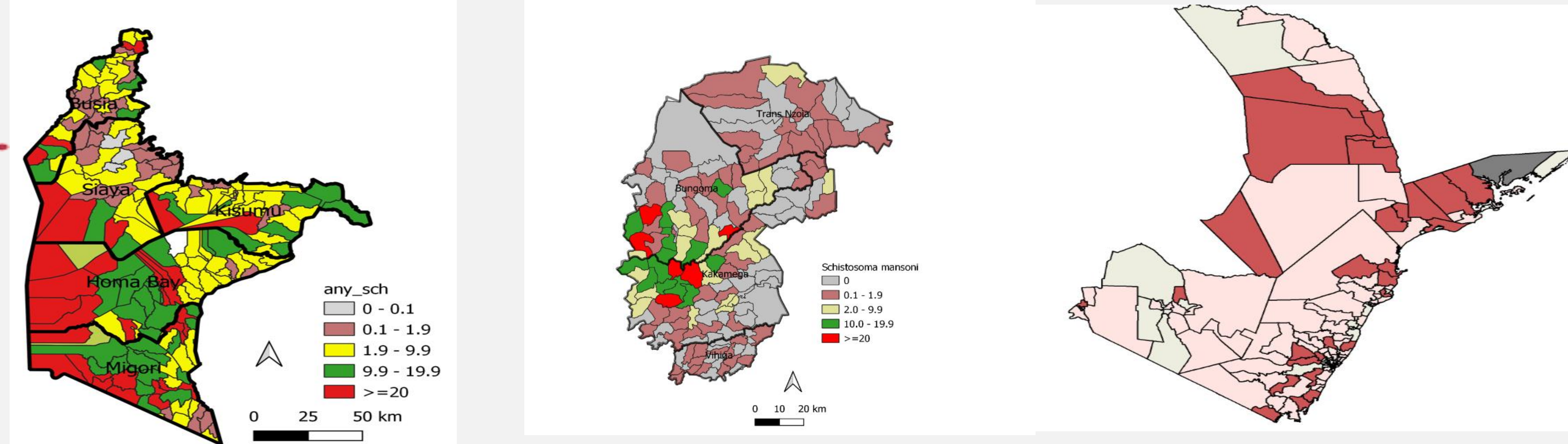
Key Insight

Aggregated and point-level data show strong spatial concordance in identifying endemic zones, but aggregation masks localized hotspots within otherwise low and moderate endemic areas.

Point-Level Prevalence Visualization



SCH Prevalence Data of the Lake Region and Coastal Kenya (respectively)



DISCUSSION AND CONCLUSION

These patterns demonstrated reflect the strong ecological and environmental determinants of transmission, particularly the role of freshwater bodies that sustain intermediate host snails. Aggregation and point level data show strong spatial concordance in identifying endemic zones. However, aggregation conceals localized hotspots within areas otherwise classified as low or moderate endemic. This has important implications for surveillance and program planning, as reliance on aggregated data alone may lead to underestimation of transmission intensity in specific communities. These findings underscore the need for a shift toward stratified, data-driven control strategies in Kenya's schistosomiasis program.

Schistosomiasis in Kenya is highly focal, with persistent transmission hotspots despite widespread low prevalence.

High-resolution mapping is essential for detecting micro-geographic variations and informing targeted, data-driven control strategies.

Stratified MDA should be prioritized: annual treatment in high-endemic areas and targeted treatment in moderate areas.

Integrated WASH interventions, strengthened surveillance, and use of ward-level data are critical to optimize resource allocation.

Focused, evidence-based interventions will accelerate progress toward interruption of transmission and elimination goals in Kenya.

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