

Peer Review

Review of: "Impact of Mass Distribution of Long-Lasting Insecticide Nets on Malaria Prevention in Lindi Region, Tanzania: A Quasi-Experimental Study"

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Title:

The title is clear and informative. It is slightly long; consider streamlining it without losing meaning. "Impact of" is somewhat vague; specifying the type of impact, e.g., effectiveness, could make it stronger. Since it's a quasi-experimental study (which does not establish causation as strongly as an RCT), the title could be more precise about the study's scope.

Suggested Revisions of the title:

"Effectiveness of Mass Distribution of Long-Lasting Insecticide-Treated Nets for Malaria Prevention in Lindi Region, Tanzania: A Quasi-Experimental Study" OR "Assessing the Impact of Mass Distribution of Long-Lasting Insecticide Nets on Malaria Prevention in Lindi, Tanzania: A Quasi-Experimental Study"

Abstract:

Your abstract provides a good summary of the study but has some areas that need improvement in terms of clarity, conciseness, structure, and grammar. Below is my assessment with specific suggestions.

Strengths:

The abstract includes all key elements – Background, Objective, Methods, Results, and Conclusion are all present.

It provides statistical results – The inclusion of the mean difference, t-value, and p-value strengthens the findings and also clearly states the significance of the findings – The conclusion emphasizes the impact of LLINs in malaria prevention.

Here is where to improve your abstract:

1. Objective should be more specific

The objective states "assess the effectiveness of free LLINs in reducing malaria burden," but it does not specify how effectiveness is measured (e.g., malaria positivity rate).

Suggestion: "This study aimed to assess the effectiveness of free mass distribution of LLINs in reducing malaria positivity rates in Lindi Region."

2. Methodology Section Needs More Clarity

The study period is presented in a slightly confusing way:

"From September 2021 to August 2022 and September 2022 to August 2023" – the wording could be clearer to avoid repetition.

I would suggest: "We conducted a quasi-experimental study comparing malaria positivity rates before (September 2021–August 2022) and after (September 2022–August 2023) the mass distribution of LLINs."

"Data were collected on District Health Information System version two" → The phrasing is unclear.

Suggestion: "Data were obtained from the District Health Information System (DHIS2) for the Lindi Region."

Results:

The paragraph mixes percentages, statistical analysis, and findings in an unstructured way.

Suggestion: Break it into a clearer flow, e.g.: "Before the LLIN distribution, the overall malaria positivity rate was 20.6%. After implementation, the rate decreased to 13%, reflecting a reduction of 7.6%."

"The mean difference in malaria positivity rates was 6.60 (SD = 2.47). A t-test analysis yielded a t-value of 6.55 (df = 5, $p < 0.001$), indicating a statistically significant reduction in malaria positivity rates."

Another problem: "A comparison of malaria cases recorded... showed disparities." → This is vague.

Suggestion: Clarify whether the disparities were regional, seasonal, or demographic.

Conclusion Needs More Precision

Problem: "Synergy with other preventive interventions" is not supported by data in the abstract. If the study analyzed only LLINs, this phrase should be removed or explained. General suggestion: Improve the clarity and logical flow of your abstract. No unnecessary repetition. The objective and conclusion should be more precise.

Introduction:

1. Clearly Define the Research Problem & Gap

i. The introduction mentions that malaria remains high in Lindi but does not explicitly state why this is a problem. It should:

ii. Identify specific gaps in previous research (e.g., lack of assessment of LLIN effectiveness in Lindi).

iii. Address why malaria morbidity persists despite LLIN distribution (e.g., improper usage, resistance to insecticides, or coverage gaps).

2. Clearly State the Research Objectives

The last sentence introduces the study's aim but could be more specific about the research objectives.

3. Ensure Literature is Recent & Relevant

Some of the referenced studies are older than five years (e.g., NMCP programs from 2010–2011, malaria incidence from 2015). While historical context is useful, it's important to incorporate recent research (2019–2023). Add more recent references (2019–2023) discussing:

4. Improve Flow & Clarity

The discussion of LLIN distribution strategies (door-to-door, continuous distribution, social marketing) is useful but slightly disjointed. The timeline of NMCP interventions (2010, 2015, 2020, 2022) could be presented more logically to avoid information overload. Consider restructuring into three distinct sections for easy understanding by readers.

Methods:

1. Clarify Sampling Method & Data Collection Process

i. The methodology states that "exhaustive sampling" was used, meaning all OPD attendees were included. However, there is no clear explanation of how data were retrieved, cleaned, and verified from DHIS2. Expand Sampling Description.

ii. Explain how DHIS2 records were accessed, extracted, and validated for this study.

iii. Mention data completeness checks and any exclusion criteria (e.g., missing records, duplicate cases).

iv. If any age or gender data were collected, state whether subgroup analyses were performed.

2. Address Potential Bias & Limitations

- i. The methodology briefly mentions potential bias due to coding errors and data completeness issues in DHIS2 but does not explain how bias was managed or minimized. Expand Bias Section.
- ii. Discuss how data completeness was assessed and missing data were handled (e.g., imputation methods or exclusion criteria).
- iii. Address selection bias
- iv. Consider mentioning potential confounders

3. Justify the Use of T-Tests & Consider Additional Statistical Analyses

The study relies solely on T-tests, which are appropriate for comparing means, but does not consider: Seasonal variations in malaria transmission (e.g., rainy vs. dry season). Multivariable analysis to control for confounding factors (e.g., age, gender, urban vs. rural

- i. Consider adding a time-series analysis (e.g., interrupted time series or regression analysis) to account for trends over time.
- ii. Mention whether covariates (e.g., age, gender, facility type) were included in subgroup analysis.
- iii. If data allow, a difference-in-differences approach could provide stronger causal inference.

General revision:

- i. Clarify Sampling Method – Explain how data were retrieved, cleaned, and validated.
- ii. Address Bias & Limitations – Discuss selection bias, missing data, and seasonal variations.
- iii. Justify Statistical Methods – Consider time-series or multivariable analysis to strengthen findings.

Results:

The clarity and depth of your results demonstrate strong analytical skills and a keen understanding of the subject. The way you've presented the findings makes a compelling case for the impact of LLINs.

Discussion and conclusion:

- i. The discussion includes a lot of detailed analysis, but the final takeaway could be more explicitly stated. A clearer final sentence reinforcing the significance of LLINs in malaria reduction and the importance of sustained efforts (e.g., improved distribution strategies and funding) would enhance impact. Instead of ending with study limitations, conclude with a strong statement on the importance of continued interventions and funding to sustain the malaria reduction efforts in Tanzania.

ii. The discussion states that malaria prevention relies on multiple methods beyond LLINs. However, it would be beneficial to quantify or elaborate on how much of the malaria reduction was due to LLINs versus other interventions. Briefly compare the relative contributions of LLINs versus other strategies based on previous studies or expert recommendations.

iii. Some parts of the discussion, especially those describing malaria positivity rates before and after LLIN distribution, could be more concise. Summarize the statistical findings in a more direct and accessible way, highlighting the most critical changes rather than repeating multiple numerical values.

iv. While the study acknowledges that LLINs degrade over time, a clearer call for policy recommendations on how to maintain their effectiveness (e.g., periodic net replacement, alternative vector control strategies) would strengthen the conclusion.

v. The conclusion is strong and aligns well with the research objectives. However, refining the key message, making statistical results more concise, and providing a more direct policy recommendation on sustaining LLIN effectiveness would improve clarity and impact.

In general, paraphrase the entire manuscript and get a good proofreader to go through it.

Declarations

Potential competing interests: No potential competing interests to declare.