ISSN: 3048-6181 www.wjphr.org 2025, Volume 2, Issue 5. Page: 06-10.

World Journal of Pharmaceutical and Healthcare Research

Review Article

PROTOCOL FOR SYSTEMATIC REVIEW AND META-ANALYSIS OF MAGNITUDE AND ASSOCIATED FACTORS OF SCABIES IN ETHIOPIA

Temesgen Negassa*[1,5], Dereilo Bekere Belitibo[1], Asfaw Merssa[1], Dinka Dugassa[2], Dagim Samuel[3], Busha Gamachu[2], Chaltu Hinkosa[4], Firomsa Bekele[5]

[1]Traditional and Modern Medicine Research and Development Directorate, Armauer Hansen Research Institute, P.O. Box 1005, Addis Ababa, Ethiopia.
[2]Ethiopian Ministry of Health, Saint Paul Hospital Millennium Medical College, Addis Ababa, Ethiopia
[2]Wallaga University, Institute of Health Sciences, School of Pharmacy, Department of Clinical Pharmacy and Pharmacy Practice, Nekemte, Ethiopia.
[3]Wallaga University, Institute of Health Sciences, School of Pharmacy, Department of Pharmacology, Nekemte, Ethiopia.
[4]Wallaga University, Institute of Health Sciences, School of Nursing and Midwifery, Department of Maternity and Reproductive Health Nursing, Nekemte, Ethiopia.
[5]Metu University, College of Medical and Health Sciences, Department of Pharmacy, Metu, Ethiopia.

Article Info

Article Received: 22 March 2025,
Article Revised: 12 April 2025,
Published on: 01 May 2025.

***Corresponding author:**

Temesgen Negassa
Ethiopian Ministry of Health,
Armauer Hansen research institute,
Addis Ababa, Ethiopia.
temesgen.negassa@gmail.com

ABSTRACT

Background: Scabies is a contagious skin condition caused by the mite Sarcoptes scabiei, transmitted through close personal contact. Despite being easily treatable, it remains a neglected tropical disease, particularly prevalent among vulnerable populations in low-resource settings. In Ethiopia, scabies has been identified as a significant public health concern, especially affecting disadvantaged groups such as street dwellers, migrants, and the impoverished. However, studies on the prevalence and associated factors of scabies in Ethiopia have been inconsistent and poorly organized. **Objectives:** to estimate the pooled prevalence of scabies and identify associated factors across all age groups in Ethiopia. **Methods and analysis:** International databases, including PubMed/PMC/Medline, EMBASE, CINAHL, Web of Science, Google Scholar, Google, Science Direct, and the Cochrane Library, will be systematically searched from September 1, 2024, to November 18, 2024. All observational studies published between January 1, 1995, and November 18, 2024, that reported the prevalence or associated factors of scabies in Ethiopia will be considered. Data extraction was performed independently by two authors using a standardized format. Statistical analysis was conducted using STATA Version 16.1, employing a random effects meta-analysis approach to account for heterogeneity among studies. **Ethics and dissemination**: Since data from previously published research will be retrieved and examined, no ethical approval will be required. In addition to presenting the findings at conferences, we will write an article for publication in a peer-reviewed journal. **Conclusion:** This systematic review and meta-analysis will provide comprehensive evidence on the pooled prevalence and associated factors of scabies across all age groups in Ethiopia. The findings aim to fill existing knowledge gaps and support public health efforts in developing more effective prevention and control strategies, particularly for vulnerable populations.

KEYWORDS: Scabies, Prevalence, Associated factors, Systematic review, Meta-analysis, Neglected tropical disease.

INTRODUCTION

Scabies is a highly contagious skin disease caused by the microscopic mite Sarcoptes scabiei. It spreads primarily through prolonged skin-to-skin contact, making it especially common in crowded living conditions and among individuals with frequent close personal interactions. The mites burrow into the skin to lay eggs, leading to intense itching, rash, and inflammation.[1, 2] The clinical manifestation of scabies typically begins with intense itching, especially at night. This persistent itching often leads to scratching, which can break the skin and create openings for secondary bacterial infections, such as impetigo. If left untreated, these complications can lead to more serious skin and systemic infections, particularly in vulnerable populations.[1, 3] Scabies, caused by the mite Sarcoptes scabiei, can lead to severe complications due to

secondary bacterial infections. Scratching the itchy lesions can breach the skin barrier, allowing bacteria such as Streptococcus pyogenes and Staphylococcus aureus to enter. These infections can result in conditions like impetigo, cellulitis, and abscesses. Repeated S. pyogenes infections are associated with acute post-streptococcal glomerulonephritis (APSGN) and acute rheumatic fever, which can lead to kidney disease and rheumatic heart disease.[2, 4, 5]

Scabies and its associated burdens are often regarded as a major public health concern in low- and middle-income countries, where limited resources, poor hygiene, and overcrowded living conditions contribute to its spread.[1, 6, 7] The disease disproportionately affects vulnerable populations, particularly young children and the elderly, who are more susceptible due to close contact and weaker immune systems.[8, 9] While there are several effective treatment options for scabies, prevention and control remain challenging due to high rates of re-infestation, which can occur through frequent community and personal contacts.[8-10] The spread of scabies is notably high in overcrowded areas, where close physical proximity significantly increases the likelihood of transmission.[11]

Globally, the prevalence of scabies ranges from 0.3% to 46%, with an estimated 147 million cases worldwide.[10, 12] There is a high prevalence in low and low-middle income countries.[6, 13] Its prevalence in Sub-Saharan Africa will be varied up to 33.7%.[10, 14-16] The prevalence of scabies in Nigeria is about 4.7% up to 65%.[17] Scabies is one of public health concerns among communicable disease in Ethiopia, especially disadvantaged people like streets, migrants and poorer.[10, 14] The magnitude of scabies infestation in Ethiopia will be varied which ranged from 2.5 to 78% and inconsistent.[18] To the best of our knowledge, no study has estimated the pooled prevalence of scabies in Ethiopia. This study aims to determine the pooled prevalence and associated factors of scabies across all age groups in the country. The findings from this systematic review and meta-analysis may serve as a call to action for policymakers to strengthen prevention and control strategies.

Objective of systematic review and meta-analysis

The primary objective of this systematic review and meta-analysis will be to estimate the pooled prevalence and associated factors of scabies in all age groups. This systematic review and meta-analysis may use an alarm for policy makers to improve prevention and control strategies of the disease.

METHODS AND ANALYSIS

Protocol design and registration

The systematic review and meta-analysis will adhere to the PRISMA guidelines. A comprehensive search strategy will be developed using keywords such as "prevalence," "associated factors," "determinants," "scabies," and "Ethiopia," combined with Boolean operators. The search will be conducted in English, with no language restrictions following electronic database i.e. PubMed/PMC/Medline, EMBASE, CINAHL, Web of Science, Google Scholar, Google, Science Direct and Cochran library. Gray literature will be identified by reviewing the reference lists of included studies. All retrieved articles will be managed using Endnote X9.

The search was conducted from September 1, 2024 up to November 18, 2024. All studies which published between January 1, 1995, and November 18, 2024 where included.

Eligibility criteria

Inclusion Criteria: All published and unpublished observational studies conducted in Ethiopia that reported the prevalence or associated factors of scabies in English will be considered. Studies published between January 1, 1995, and November 18, 2024, will be included.

Exclusion Criteria: Full-text articles will be searched for only eligible studies. Articles with inaccessible full texts will be excluded. Case-control study designs without a defined population will be excluded for the first outcome.

Outcome variable

The primary outcome of this systematic review and meta-analysis is the prevalence of human scabies across all age groups. The prevalence will be calculated as the proportion of individuals infected with scabies among all participants in the study. The secondary outcome is identifying the major factors associated with scabies. Factors associated with scabies included in this study will be family size, frequency of bath, any contact (sharing bed, cloth and skin contact) with scabies case and hand will being with soap.

Search strategy and searching sources

Electronic searches

We have searched the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library, 2005, issue 4)[19] which contains the Acute Respiratory Infections Groups specialized register, MEDLINE (OVID) (1966 to January 2006)[19, 20] and EMBASE (Web- SPIRS) (1990 to September 2005).[21] There will be language or publication restrictions. We combined the MEDLINE search with the highly sensitive search strategy for identifying controlled trials, as designed.[22] There will be no language restrictions searching other resources.

We will also search bibliographies of selected articles to identify any further trials not extracted by the A search strategy will be developed using key concepts in the research question: For each key concept, appropriate free-text words and Medical Subject Headings (MeSH) will be developed. To ensure a comprehensive search of appropriate electronic databases, certain text words will be truncated, while wildcards will be used for some. This will enable the retrieval of relevant articles that might have used different spellings for the same word. The free-

text words (truncated or with wildcards) and MeSH terms will be combined using Boolean logic operators: AND, OR and NOT, appropriately.

A pretest of the search strategy will be conducted by co-author FB and verified by TN and DD in PubMed from September 1, 2024, to November 18, 2024. This will ensure the strategy's effectiveness in retrieving relevant articles and allow for any necessary adjustments. Meanwhile, from September 1 to November 18, 2024, three independent reviewers (TN, DB, and DD) will implement the electronic search strategy across several databases: MEDLINE via PubMed, EMBASE, Cochrane Library, and Ovid, Cumulative Index to Nursing and Allied Health Literature, and Web of Science.

Data collection and analysis

Study Selection: Citations identified by the search strategy will be exported to EndNote, and duplicates will be removed. The remaining citations will be screened by titles and abstracts by two review authors. Ineligible studies will be excluded. Full texts of eligible studies will be retrieved electronically or by contacting the authors. The studies will be independently reviewed for inclusion by the two review authors. Disagreements will be resolved by discussion.

Data extraction and management

In this review, two authors will identify articles and extract relevant data independently. Data will be extracted from full text studies. The extracted data will be primary author name, publication year, regions where the study conducted, study area, sample size, study design, prevalence with 95% confidence intervals, the response rate and odds ratio or 2 × 2 contingency table for the selected each factor will be extracted on the reports of original studies. Any disagreement between the two authors due to inclusion and data collection will be solved by discussion and consulting with the third and author (AM) and fifth author (DS).

Quality assessment

Two authors will independently assess the quality of each original study using a quality assessment tool. All included published and unpublished studies will be evaluated for inclusion based on their title and abstract. The quality of studies will be assessed using the Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) checklist for prevalence, cross-sectional, and case-control studies.[1, 23] Studies scoring five or above will be included for both study designs. Studies with a score of five or higher will be considered at low risk of bias, while those scoring below five will be classified as having a high risk of bias. The agreement between the two authors (DD and DS) during the quality assessment will be tested using Kappa (0.86).

Assessment of risk of bias

Microsoft Excel format will be used to manage the extracted data and analyzed using STATA version 16.1 Software. The extracted data will be presented using forest plot which shows point estimates of study effects and their confidence interval. The size of the box indicated the sample size or weights and the horizontal line shows confidence interval or the precision of the study. It also gives highlight information about heterogeneity.

Assessment of heterogeneity

We will be assessing the heterogeneity of the included studies using the Cochran Q and I2 test. The value of I2 greater than 50 will be considered as the existence of heterogeneity in the studies. A random effect meta-analysis will be used due to the presence of heterogeneity. To identify the source of this heterogeneity and the distribution, subgroup and sensitive analysis will be conducted. Funnel plot and Eggers test will be used to check the presence and significance of publication bias.

Assessment of reporting biases

Before combining the study results we will check for publication bias by using a funnel plot. For each of the outcome variables (cure rate, failure rate, relapse rate, rate of hospitalization, the complications need for change in antibiotics and mortality rate) a two-by-two table will be used for each study and Breslow's test of homogeneity will be performed to determine variation in study results.

We also attempt to do indirect comparisons of various drugs when studies on direct comparisons will be not available. For example, we will compare antibiotics A and C when a comparison of antibiotics A and B will be available and likewise a separate comparison between antibiotics B and C. This type of comparison will be done only if the inclusion and exclusion criteria of these studies, the dose and duration of the common intervention (antibiotic B), baseline characteristics and the outcomes assessed will be similar (Bucher 1997).

Cumulative meta-analysis

To determine the 10-year time trends in antibiotics for community acquired pneumonia in children, a cumulative meta-analysis (defined as the performance of an updated meta-analysis every time a new trial appears) which is critical in evaluating the results of primary studies in a continuum will be performed.

In cumulative meta-analysis, one primary study will be added at a time according to publication date and the results will be summarized until all primary studies will have been added. Cumulative meta-analysis will therefore retrospectively identify the point in time at which treatment effect, in this case TSR, first reached conventional levels of significance. In doing so, cumulative meta-analysis will represent in a compelling way the trends in the evolution of summary (effect size) and will assess the impact of a specific study on the overall conclusion.

Sensitivity analysis
We will perform sensitivity analysis to reflect the extent to which the meta-analytical results and conclusions are altered as a result of changes in analysis approach. This helps in assessing the robustness of study conclusion and the impact of methodological quality, sample size and analysis methods on the meta-analytical results. In particular, the leave-one-out jackknife sensitivity analysis in which one primary study is excluded at a time will be used. We will be then compare the new pooled antibiotics for community acquired pneumonia in children with that of the original antibiotics for community acquired pneumonia in children.

If the new pooled antibiotics for community acquired pneumonia in children will lie outside of the 95% CI of the original pooled antibiotics for community acquired pneumonia in children, we will conclude that the excluded study has a significant effect in the study and should be excluded from the final analysis.

Subgroup analysis
We will perform subgroup analysis on antibiotics for community acquired pneumonia in children based on several study characteristics.

Ethics and dissemination
No human subject participants will be involved. On completion of the analysis, we will prepare a manuscript for publication in a peer-reviewed journal and present the results at conferences.

Implications of the review
The aim of this systematic review and meta-analysis will be to summarize antibiotics for community acquired pneumonia in children. The review results may impact on practice, policy and research. Healthcare providers, managers and policy-makers can use the findings to improve the performance of antibiotics for community acquired pneumonia in children programmers by developing strategies and initiating deliberate steps for addressing gaps in antibiotics for community acquired pneumonia in children care. Second, it may provide a foundation for prospective research on antibiotics for community acquired pneumonia in children.

Patient and public involvement
Patients will be not involved in the development of the research question, outcome measure and study design.

CONTRIBUTORS:- TN is the first and corresponding author; TN and DD conceived and designed the study; TN, DD and FB will acquire data; TN and DD will analyses and interpret data; TN, DD, BG, CH, DB, AS and FB drafted the initial and final manuscripts; TN, DD,DB,AF, BG, CH and FB performed critical revisions of the manuscript. All authors approved the final version of the manuscript.

FUNDING: The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

COMPETING INTERESTS: - None declared.

PATIENT CONSENT FOR PUBLICATION: - Not required.

ETHICS APPROVAL: - Ethical approval will not be required because this study will retrieve and synthesize data from already published studies.

PROVENANCE AND PEER REVIEW: Not commissioned; externally peer reviewed.

REFERENCES

1. Azene, A.G., A.M. Aragaw, and G.T. Wassie, *Prevalence and associated factors of scabies in Ethiopia: systematic review and Meta-analysis.* BMC infectious diseases, 2020. 20: p. 1-10.
2. Bucher, H.C., et al., *The results of direct and indirect treatment comparisons in meta-analysis of randomized controlled trials.* Journal of clinical epidemiology, 1997. 50(6): p. 683-691.
3. Gupta, S., et al., *Prevalence and determinants of scabies: A global systematic review and meta-analysis.* Tropical Medicine & International Health, 2024. 29(12): p. 1006-1017.
4. Mitchell, E., et al., *Scabies: current knowledge and future directions.* Frontiers in Tropical Diseases, 2024. 5: p. 1429266.
5. Schneider, S., et al., *Prevalence of scabies worldwide—An updated systematic literature review in 2022.* Journal of the European Academy of Dermatology and Venereology, 2023. 37(9): p. 1749-1757.
6. Soares-Weiser, K., *Cochrane database of systematic reviews.* 2000.
7. Engelman, D., et al., *The public health control of scabies: priorities for research and action.* The Lancet, 2019. 394(10192): p. 81-92.
8. Romani, L., et al., *Prevalence of scabies and impetigo worldwide: a systematic review.* The Lancet infectious diseases, 2015. 15(8): p. 960-967.
9. Yoneda, K., et al., *Preoperative clinical predictors of lymphovascular invasion of bladder tumors at transurethral resection pathology.* Current Urology, 2020. 14(3): p. 135-141.
10. Dagne, H., et al., *Prevalence and associated factors of scabies among schoolchildren in Dabat district, northwest Ethiopia, 2018.* Environmental health and preventive medicine, 2019. 24: p. 1-8.
11. Chosidow, O., *Scabies and pediculosis.* The Lancet, 2000. 355(9206): p. 819-826.
12. Mphande, F.A., *Skin Disorders in Vulnerable Populations.* Causes, Impacts and Challenges, 2020: p. 3-15.
13. Yirgu, R., et al., *Scabies in the Amhara region of northern Ethiopia: a cross-sectional study of prevalence,*

determinants, clinical presentation and community knowledge. BMJ open, 2023. 13(10): p. e075038.
14. Al-Baker, S.M., F.A. Al-Gasha'a, and A.F. Al-Saadi. *Prevalence of common skin diseases among outpatients clinic of Baghdad hospital*. in *AIP Conference Proceedings*. 2022. AIP Publishing.
15. Paakkonen, H., et al., *Global Health Challenges: Issues in preparing students for developing skills and competencies in global health-a middle range future perspective.* 2018.
16. El-Moamly, A.A., *Scabies as a part of the World Health Organization roadmap for neglected tropical diseases 2021–2030: what we know and what we need to do for global control.* Tropical medicine and health, 2021. 49(1): p. 64.
17. Ogunbiyi, A., E. Owoaje, and A. Ndahi, *Prevalence of skin disorders in school children in Ibadan, Nigeria.* Pediatric dermatology, 2005. 22(1): p. 6-10.
18. Belachew, S. and A. Kassie, *Burden and drivers of human scabies among children and adults in northwestern Ethiopia: the case of the neglected tropical disease.* International Journal of Infectious Diseases, 2018. 73: p. 317.
19. Scholten, R., M. Clarke, and J. Hetherington, *The cochrane collaboration.* European journal of clinical nutrition, 2005. 59(1): p. S147-S149.
20. Lam-Antoniades, M., S. Ratnapalan, and G. Tait, *Electronic continuing education in the health professions: an update on evidence from RCTs.* Journal of Continuing Education in the Health Professions, 2009. 29(1): p. 44-51.
21. SK, K. and P. RM, *Cochrane review: Antibiotics for community acquired pneumonia in children.* Evidence-Based Child Health: A Cochrane Review Journal, 2006. 1(4): p. 1102-1205.
22. Zhang, L., I. Ajiferuke, and M. Sampson, *Optimizing search strategies to identify randomized controlled trials in MEDLINE.* BMC Medical Research Methodology, 2006. 6: p. 1-10.
23. Anesthetist, S.N., *of Systematic Review Protocol.*