INPLASY

Seroprevalence and potential risk factors for brucellosis infections in farm animals and humans in sub-Saharan Africa from 2012 to 2022: A systematic review and meta-analysis

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ADMINISTRATIVE INFORMATION

Support - This work didn't have any funding. It was an initiative for student capacity building in research overseen by the supervisor.

Review Stage at time of this submission - Data extraction.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2023120123

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 31 December 2023 and was last updated on 31 December 2023.

INTRODUCTION

Review question / Objective What is the overall seroprevalence of Brucellosis in farm animals and humans in sub-Saharan Africa between 2012 and 2022?

Rationale Brucellosis is a neglected tropical disease that affects both public health and animal productivity in Africa. This infection leads to reproductive disorders in farm animals, such as abortions, fetal deaths, and retained placenta. These disorders reduce the income of farmers in developing countries, who often try to treat them without proper safety measures. This exposes them to the risk of contracting the disease from the infected animals. Moreover, farmers may sell contaminated animal products to the community, spreading the infection to other humans. This creates a complex transmission pattern from animals to humans that is difficult to control. This review will present an overview of the brucellosis burden among farm animals and humans at risk between 2012 and 2022.

Condition being studied Brucellosis infection.

METHODS

Search strategy The search was conducted using database search software (Harzing's Publish or Perish) to obtain articles published on seroprevalence of brucellosis among humans and animals in sub-Saharan African between 2012 and 2022. The databases included PubMed, OpenAlex, Google Scholar, Semantic scholar, and Crossref. Medical subject headings (MESH) and keywords for the search was utilized.
The initial search comprised of the entire geographical region of Africa and later articles

were filtered by location for sub-Saharan Africa (SSA). Articles were also searched according to research participants (farm animals and humans), and the outcome (seroprevalence of brucellosis) prior to data extraction.

Participant or population Humans and Farm animals.

Intervention N/A.

Comparator N/A.

Study designs to be included Cross-sectional studies only.

Eligibility criteria Cross-sectional studies reporting seroprevalence of brucellosis in Farm animal species; Cattle, goats, sheep, pigs, horses, camels, and donkeys. We also included human studies that reported the seroprevalence of Brucellosis and associated risk factors for infection.

Information sources PubMed, OpenAlex, Google Scholar, Semantic scholar, and Crossref.

Main outcome(s) Seroprevalence of Brucellosis.

Additional outcome(s) Risk factors for Brucellosis infection in humans.

Data management Rayyan AI online tool will be used for data management and screening of articles against the eligibility criteria.

Quality assessment / Risk of bias analysis Quality/Risk of bias assessment will be done using the AXIS appraisal tool for cross-sectional studies.
It comprises 20 questions that evaluate the sample size appropriateness and adequacy, ethics, conflicts of interest, response rate, aims, population, design, measures, discussion, results, significance, data, methods, and limitations.
For each question "yes", "no" and "don't know" responses are used to assess the quality of the study. A scoring method employed in previous systematic literature reviews will be employed where "yes or not applicable" is assigned 1 point, and "no or don't know"; is 0 points. From these scores, the quality/risk of bias of a study will be graded and reported.

Strategy of data synthesis Meta-analysis.

Subgroup analysis Sub-group analysis will be carried out for regions in sub-Saharan Africa ie (central, western, eastern, southern), different animal species and humans, Diagnostic tests employed for seroprevalence determination.

Sensitivity analysis N/A.

Language restriction English.

Country(ies) involved Uganda.

Keywords Seroprevalence; Brucellosis; Humans; Farm animals; Sub-Saharan; Africa; Risk factors; Systematic review; Meta-analysis.

Dissemination plans The review will be published via open access journal and later shared via social media platforms such as linkedIn and twitter.

Contributions of each author

Author 1 - David Wagaba - The author formulated the eligibility criteria, search strategy and risk of bias assessment. He also participated in data extraction and will carry out the analysis.
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Author 2 - Lawrence Mugisha - The author initiated and conceptualized the work and supervising the entire review process.
Email: lawrence.mugisha@mak.ac.ug
Author 3 - Jacob Gizamba - The author contributed in the database searches and the tool to be used for the risk of bias assessment. He also participated in the screening of the studies and data extraction.
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