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Original Article

Hand hygiene intricacies in maternity departments in Sub-Saharan Africa: A scoping review.

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Abstract

Introduction

Hand hygiene (HH) is vital in preventing healthcare-associated infections (HAIs), which are a significant concern in maternity departments, particularly in Sub-Saharan Africa (SSA). Despite the critical role of effective HH practices during childbirth, compliance rates remain alarmingly low across the region. This scoping review aims to systematically map the existing research on the intricacies of healthcare workers in maternity departments in Sub-Saharan Africa.

Methods

Literature published in English across three databases: PubMed, Medline, and ScienceDirect, was reviewed. The methodology involved a comprehensive search strategy that encompassed studies published between January 2016 and May 2025. A robust review process was initiated, led by a team of eight reviewers, who collaboratively assessed the identified literature. To ensure the rigour and thoroughness of the review, the review was supported by a lead reviewer, who oversaw the evaluation process and facilitated consensus on key findings.

Results

Out of 481 records identified through database searching, only three studies were ultimately selected for inclusion, conducted across multiple SSA countries, with a focus on assessing knowledge, attitudes, and practices regarding HH. The results highlight significant variability in compliance rates, with many facilities reporting suboptimal HH practices due to inadequate resources, training, and awareness. Barriers to effective HH include a lack of supplies, insufficient infrastructure, and cultural attitudes towards HH.

Conclusion

This scoping review reveals a critical gap in research on hand hygiene practices among healthcare workers in Sub-Saharan African maternity departments, with only three studies meeting the inclusion criteria. These findings underscore an urgent need for expanded research and targeted interventions to improve HH practices and reduce healthcare-associated infections in SSA maternity settings.

Keywords: *Hand hygiene, Healthcare-associated infections, Maternity departments, Sub-Saharan Africa, Scoping review*

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Introduction

Hand hygiene (HH) is a critical component in preventing infections acquired within healthcare settings. Most hospital-acquired infections (HAIs), which pose a significant risk to individuals receiving treatment, are preventable through effective HH practices performed at the correct times [World Health Organisation, 2025]. HH involves cleaning hands using soap and water or hand sanitisers, effectively preventing the spread of germs, including antibiotic-resistant strains, thereby protecting both healthcare personnel and patients globally [CDC, 2024].

The burden of healthcare-associated infections underscores the need for effective infection control measures. Research indicates that among every 100 patients in acute-care hospitals, approximately seven individuals in high-income countries (HICs) and 15 individuals in low- and middle-income countries (LMICs) will develop at least one HAI during their hospital admission [Allegranzi et al., 2011; World Health Organisation, 2011].

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In 2021, the World Health Organisation established the Technical Advisory Group (TAG) on HH to focus on developing a research agenda for HH and, in the future, other aspects of infection prevention and control (IPC) in healthcare settings [WHO,2023]. A review of HH compliance in low-income countries (LICs) and middle-income countries (MICs) revealed a wide range of compliance rates from 0% to 100%, indicating that significant challenges remain in ensuring proper infection prevention practices, particularly during childbirth in LMIC facilities [Gon et al., 2020]. Estimates indicate that 55% of healthcare facilities in the least developed countries lack these services, and one in five facilities lack improved sanitation. These deficiencies present substantial barriers to infection prevention efforts in these regions [WHO,2025].

Sub-Saharan Africa (SSA) presents a unique context for exploring HH and IPC. This region encompasses a mix of low, lower-middle, upper-middle, and high-income countries, including many that are fragile or conflict-affected, as well as small states facing limitations in population and resources [World Bank, 2025]. With its abundant natural resources and a market of 1.2 billion people, SSA holds significant potential for improving healthcare outcomes through strategic investments in infrastructure and services [World Bank, 2025].

Enhanced HH practices by healthcare workers (HCWs) have been shown to decrease the rate of HAIs [Pittet et al., 2006; Pittet et al., 2001]. Thus far, there is a dearth of data on the HH practices of healthcare workers in SSA. The increasing complexity of patient care, compounded by a growing prevalence of HAIs in SSA, underscores the importance of this study. Thus, this review aimed to map the HH compliance and associated factors among HCWs in countries located in SSA. Identifying these gaps may facilitate the effective and efficient use of HH in maternity departments, thereby mitigating the unnecessary risk of infections.

Methods

A scoping review was chosen for this study to map the current state of research on the intricacies of HH in maternity departments in SSA, utilising the methodology of Arksey and O'Malley [2005] and the recommendations of Levac et al. [2010]. The steps included specifying the research question, identifying relevant literature, selecting studies, mapping the data, and summarising and reporting the results [Arksey & O'Malley, 2005; Levac et al., 2010].

Step 1: Identifying the research question

This scoping review addresses the question: What is the extent of the literature on studies focusing on HH in maternity departments in SSA?

Step 2: Identifying relevant studies

Titles and abstracts were screened for eligibility. Full text of the articles that met the inclusion criteria was downloaded and reviewed. To ensure relevance, the inclusion criteria targeted studies conducted in healthcare settings across SSA, encompassing quantitative, qualitative, or mixed-method designs published between January 2016 and May 2025. This timeframe was crucial for capturing current practices of healthcare workers in maternity departments in SSA. Exclusion criteria included studies not conducted in SSA, those not focusing on HH practices, compliance with HH of healthcare workers within the maternity departments, and abstracts lacking full text.

Step 3: Selecting Studies in the review

Peer-reviewed studies were searched from PubMed (n = 6), Scopus (n = 41), CINAHL (n = 104), the Cochrane Library (n = 3), and Google Scholar (n = 327).

Search strategy

A combination of controlled vocabulary and free-text terms was used, e.g., ("hand hygiene" OR "handwashing" OR "infection control") AND ("knowledge" OR "practice" OR "attitude") AND ("maternity departments" OR "obstetric care" OR "maternity wards") AND ("nurses" OR "midwives" OR "healthcare providers") AND ("Africa" OR individual African country names).

Selection of Sources of Evidence

All search items were imported into Microsoft Excel for the removal of duplicates and management. Eight reviewers independently screened titles and abstracts, followed by a full-text review. Discrepancies were resolved by consensus with the study lead.

Step 4: Charting the data

The data extraction table (Table 1) was developed with the following headings: author(s) name(s), year of publication, study objective, country, study population, design, and tools. A careful review of the included studies was undertaken, and all researchers independently extracted data from the articles. The findings were collated and discussed by the research team and were also compared with the articles identified in the literature search. The PRISMA diagram (Figure 1) illustrates the process of data.

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Table 1: Data of eligible studies in the final review

Authors and year	Tools	Population and sample size	Country	Design and methods	Aim or objective
Malonga et al, 2017	The observation with an observation guide and maintenance using a questionnaire	7 nurses are responsible for maternity services	Kenya	Descriptive cross-sectional	Evaluating the structural-functional conditions of hospital hygiene maternity wards of public hospitals in Lubumbashi
Umuhoza et al 2023	WHO HH questionnaire	29 healthcare workers (20 nurses/midwives and 9 doctors)	Rwanda	A cross-sectional study	Assess the hand hygiene knowledge level and compliance among the health care providers at Kirehe District Hospital.
Buxton et al. 2019	World Health Organisation (WHO) WASHFIT [12] and SoapBox WASH (water, sanitation and hygiene) & Clean Toolkit tools.	Qualitative interviews were conducted with the manager, one nurse/midwife, and one cleaner in each HCF.	Nigeria	Observational study	To identify the barriers and opportunities experienced by staff when implementing infection prevention and control (IPC) guidelines in maternity wards and delivery units in six health centres in two states in Nigeria.

Step 5: Collating, summarising, and reporting the Results

Given the small number of included studies (n=3), a narrative synthesis approach was employed. Each article was reviewed manually and thoroughly by the authors, with findings extracted and organised deductively under predetermined headings relevant to maternal health care service provision. A data extraction worksheet was used to systematically compile and synthesise the conclusions of each study, allowing for comparison of results across the different Sub-Saharan African regions represented. This structured approach facilitated the identification of patterns, commonalities, and variations in maternal healthcare service provision across different contexts. By organising the extracted information into cohesive categories, the current review enabled a clear presentation of the key findings. It provided meaningful insights into HH practices in maternity departments in Sub-Saharan Africa despite the limited number of eligible studies.

Results and discussions

A total of 481 records were identified from database searches; after removal of 674 irrelevant records, 134 records were available for title and abstract screening, of which 57 were retrieved and 24 assessed for full-text review. Following full-text assessment, 21 articles were excluded, and data from 3 articles were extracted for analysis and included in the final scoping review (Figure 1).

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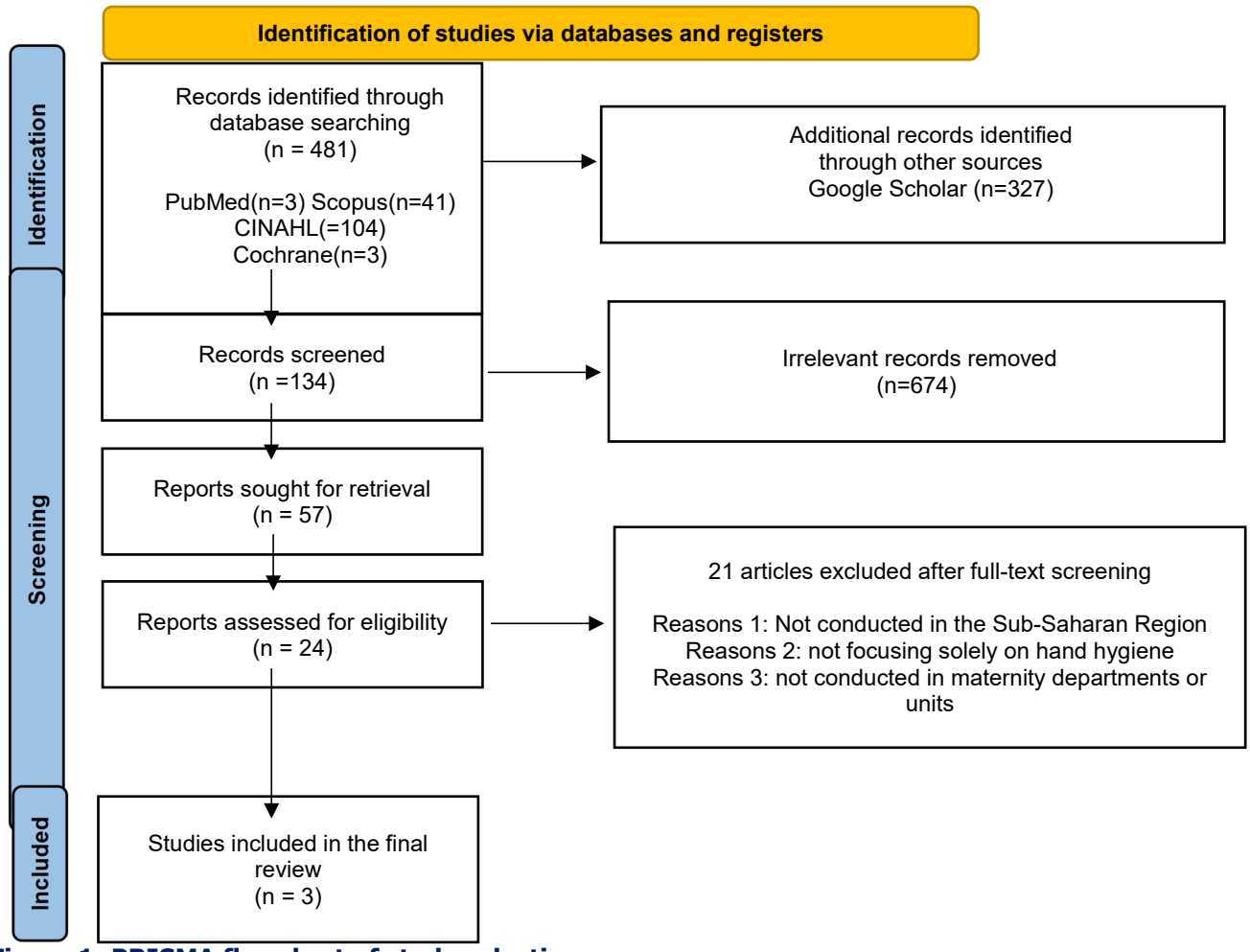

Figure 1: PRISMA flowchart of study selection process.

A total of three studies were included in the scoping review. The data presented in the review of eligible studies highlight significant insights into infection prevention and control (IPC) practices within maternity services across different countries in SSA, specifically Kenya [Malonga et al. 2017], Rwanda [Umuhoza et al. 2023], and Nigeria [Buxton et al. 2019]. The methodologies employed in these studies, ranging from descriptive cross-sectional to observational studies, offer valuable insights into current hygiene practices and their implications for healthcare outcomes.

In Kenya, the study by Malonga et al. [2017] utilised an observational approach with a structured guide to assess the hygiene conditions in maternity wards. The findings revealed concerning deficiencies in hospital hygiene, especially regarding the availability of water and the management of medical waste. These issues pose significant risks to patient safety and underscore the urgent need for enhanced infrastructure and practices in public healthcare facilities. The descriptive cross-sectional design allows for a snapshot of the situation but may not fully capture the underlying factors contributing to the observed hygiene deficiencies.

Rwanda's study by Umuhoza et al. [2023] employed a cross-sectional survey using the WHO Hand Hygiene (HH) questionnaire to assess healthcare workers' knowledge and compliance at Kirehe District Hospital. The results indicated a relatively high level of knowledge about HH among participants, yet a significant gap in skills practice was identified. The availability of essential HH resources, such as soap and water, was limited, highlighting systemic issues that can undermine even the most well-informed healthcare workers. This study illustrates the efficacy of structured questionnaires for assessing knowledge levels, but also emphasises the necessity of providing the resources required for translation.

An observational study was conducted across six healthcare facilities in Nigeria [Buxton et al, 2019], examining midwives performing procedures on five women from the onset of labour until the delivery of the

placenta. The objective was to assess the infection risk associated with HH during procedures requiring aseptic techniques, comparing adherence to protocols with instances of potential recontamination. The findings indicated that effective handwashing with soap and the application of sterile gloves occurred without recontamination in only 3% of procedures necessitating aseptic techniques. Furthermore, the analysis revealed no significant differences in compliance with HH practices among midwives and doctors, nor across the various facilities or states involved in the study. This aligns with previous studies that reported inadequate adherence to HH practices in healthcare environments across both low- and high-income settings [Alex-Hart & Opara, 2011; Buxton, 2019]. Buxton [2019] further revealed that HH remains suboptimal despite prior facility-level training on HH protocols and the availability of handwashing supplies in easily accessible areas within delivery units.

Overall, these studies collectively highlight systemic issues that hinder the implementation of effective IPC practices in maternity healthcare settings in Kenya, Rwanda, and Nigeria. The consistent finding of inadequate resources and inconsistent practices among healthcare workers highlights the complex interplay between knowledge, environment, and behaviour in achieving compliance with health guidelines. Addressing these issues requires not only educational interventions but also substantial investments in infrastructure and resource availability to enhance the quality of care and ultimately improve maternal and neonatal health outcomes across the region.

The consistently identified barriers, such as an inadequate water supply, insufficient waste management infrastructure, and limited availability of soap and sterile gloves, highlight systemic challenges that extend beyond individual healthcare worker behaviour. Abel et al. [2025] emphasise that barriers to HH adherence among healthcare professionals are intertwined and complex, with the main factors interplaying among behavioural, societal, interpersonal, physical, and organisational dimensions. This multi-layered understanding reinforces the findings of this review, which show that structural deficiencies create an environment in which even well-trained, knowledgeable staff cannot consistently practice effective HH, ultimately compromising maternal and neonatal safety.

Supporting this notion is a study conducted in Rwanda among healthcare workers by Ndatimana et al. [2020], which found that compliance with HH is directly associated with the availability of HH facilities, emphasising that well-maintained water sources and soap at handwashing stations should be a priority in healthcare settings. The study by Malonga et al. [2017] on water shortages in Kenya and the study by Umuhoza et al. [2023] on Rwanda's findings of limited soap availability corroborate this relationship between infrastructure and compliance, demonstrating that even knowledgeable healthcare workers cannot adhere to protocols without essential resources.

The scarcity of research in this area is itself a significant finding, suggesting that HH in SSA maternity settings remains an understudied yet critical area requiring urgent attention. The regional scope of identified studies indicates that these challenges are not isolated incidents but rather reflect widespread systemic issues across Sub-Saharan Africa.

Limitations

This scoping review acknowledges several significant limitations that influence the interpretation and applicability of its findings. Firstly, the restriction to English-language publications poses a considerable risk of excluding relevant research conducted in languages other than English. This limitation could lead to a narrow understanding of the topic of the current review, as valuable insights and findings from non-English-language literature might be overlooked. Additionally, the use of different tools and methodologies, as well as the findings of the included studies, means that the quality of the evidence remains unassessed. The cross-sectional design of these studies provides only a snapshot of behaviours at a specific point in time and cannot track changes over time. Lastly, the risk of bias assessment or appraising the quality of the included studies was not performed in this review.

Recommendations

To enhance HH practices and improve infection prevention strategies within healthcare organisations, future studies should include larger and more diverse participant groups across various settings. By incorporating mixed-methods research designs, combining qualitative interviews with quantitative surveys, researchers can gain a more nuanced understanding of healthcare workers' compliance behaviours and the factors influencing them. Longitudinal studies will further provide insights by monitoring changes in hygiene practices over time, thus evaluating the effectiveness of various training and interventions. Healthcare facilities must prioritise resource availability, ensuring that essential items, such as handwashing stations and personal protective equipment, are consistently stocked. Standardising definitions and metrics for infection prevention and control practices will facilitate better comparisons across studies, aiding the development of evidence-based guidelines.

Regular training and constructive feedback are essential in reinforcing knowledge and adherence among healthcare workers. Fostering a culture of safety and accountability will encourage staff to report hygiene non-compliance without fear of repercussions, leading to greater commitment to best practices. Utilising technology to monitor HH compliance can offer real-time insights, further supporting adherence to established standards. By addressing these areas, healthcare organisations can significantly improve hygiene

practices, ultimately enhancing patient safety and the quality of care provided.

Conclusion

Effective HH practices are essential for preventing healthcare-associated infections in maternity departments throughout Sub-Saharan Africa. This scoping review reveals significant gaps in compliance driven by various barriers, including resource limitations and cultural attitudes. To improve maternal and neonatal health outcomes, targeted interventions such as standardised guidelines, ongoing training, and tailored policy initiatives are urgently needed. Addressing these challenges will enhance infection prevention strategies and ultimately foster safer healthcare environments in the region.

List of abbreviations

HH	Hand hygiene
HCW	Healthcare workers
HAI	Healthcare-Associated Infections
LMIC	Low- and middle-income countries (LMICs)
IPC	Infection Prevention and Control
SSA	Sub-Saharan Africa
TAG	Technical Advisory Group
WHO	World Health Organisation

Registration of the review

This scoping review protocol was not registered before commencement.

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Declaration of conflicting interests

The authors have no competing interests to declare.

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None

Data availability statement

The data supporting the findings of this scoping review are derived from publicly available published studies. All included articles (n=3) were accessed through academic databases and are cited in the reference list. Additional data extraction tables and detailed screening records are available from the corresponding author upon reasonable request.

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