

Hand Hygiene Among Healthcare Professionals in the Central-West Region: A Scientometric Analysis

Higienização das Mãos Entre Profissionais de Saúde na Região Centro-Oeste: Uma Análise Cientom

Higiene de Manos Entre Profesionales de la Salud en la Región Centro-Oeste: Un Análisis Cientométrico

RESUMO

Os Centros de Controle e Prevenção de Doenças (CDC) atualizaram em 2002 as diretrizes para a higienização das mãos. No Centro-Oeste do Brasil, região com a segunda menor densidade demográfica do país (10,63 hab/km² – FAPESPA, 2024), a dispersão geográfica da população e a infraestrutura limitada em áreas rurais aumentam a vulnerabilidade dos sistemas locais de saúde. Esta revisão sistemática analisou 12 artigos publicados entre 2006 e 2024 sobre a higienização das mãos na região, identificando lacunas significativas, especialmente no Mato Grosso do Sul, e barreiras associadas à falta de especialização, escassez de recursos e ausência de políticas públicas que promovam a educação continuada. Os resultados ressaltam a necessidade de ações baseadas em evidências para aprimorar a adesão à higienização das mãos, garantindo maior segurança aos pacientes e reduzindo a transmissão de infecções. As informações obtidas fornecem subsídios importantes para o desenvolvimento de políticas públicas e programas de capacitação regionais.

DESCRIPTORIOS: Assepsia, Educação Continuada, Higiene das Mãos, Segurança do Paciente, Prevenção e Controle de Infecção

ABSTRACT

The Centers for Disease Control and Prevention (CDC) updated hand hygiene guidelines in 2002. In Brazil's Central-West region, which has the second-lowest population density in the country (10.63 inhabitants/km² – FAPESPA, 2024), the geographic dispersion of the population and limited infrastructure in rural areas increase the vulnerability of local health systems. This systematic review analyzed 12 articles published between 2006 and 2024 on hand hygiene in the region, identifying significant gaps—especially in Mato Grosso do Sul—and barriers related to lack of specialization, resource scarcity, and absence of public policies promoting continuing education. The results highlight the need for evidence-based actions to improve adherence to hand hygiene, ensuring greater patient safety and reducing infection transmission. The information obtained provides important subsidies for the development of regional public policies and training programs.

DESCRIPTORS: Asepsis, Continuing Education, Hand Hygiene, Patient Safety, Infection Prevention and Control

RESUMEN

Los Centros para el Control y la Prevención de Enfermedades (CDC) actualizaron en 2002 las directrices para la higiene de manos. En la región Centro-Oeste de Brasil, que tiene la segunda menor densidad demográfica del país (10,63 hab/km² – FAPESPA, 2024), la dispersión geográfica de la población y la infraestructura limitada en zonas rurales aumentan la vulnerabilidad de los sistemas locales de salud. Esta revisión sistemática analizó 12 artículos publicados entre 2006 y 2024 sobre la higiene de manos en la región, identificando brechas significativas, especialmente en Mato Grosso do Sul, y barreras asociadas a la falta de especialización, escasez de recursos y ausencia de políticas públicas que promuevan la educación continua. Los resultados resaltan la necesidad de acciones basadas en evidencia para mejorar la adhesión a la higiene de manos, garantizando mayor seguridad a los pacientes y reduciendo la transmisión de infecciones. La información obtenida proporciona insumos importantes para el desarrollo de políticas públicas y programas de capacitación regionales.

DESCRIPTORIOS: Asepsia, Educación Continua, Higiene de Manos, Seguridad del Paciente, Prevención y Control de Infecciones

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INTRODUCTION

Hand hygiene continues to be recognized as a fundamental measure for preventing and controlling infections in healthcare services. In 2023, the World Health Organization⁽¹⁾ published its first global research agenda on hand hygiene, identifying that average adherence without specific interventions is only about 40%, reaching 60% in critical units, highlighting the persistent underuse of the practice at points of care⁽¹⁾. Accordingly, the WHO stated in 2025 that monitoring hand hygiene adherence should be established as a priority national indicator, with a target for implementation in referral hospitals by 2026⁽²⁾.

In the Brazilian context, recent studies in the Midwest region showed an average adherence of 46.2% in critical care units, negatively influenced by inadequate infrastructure, incorrect use of gloves, and patient safety climate⁽³⁾. A study in a COVID-19 unit revealed that only 13.3% of professionals correctly performed the three steps of the recommended technique, highlighting the low technical quality of friction⁽⁴⁾. In addition, organizational, environmental, and managerial factors proved to be determinants in hand hygiene adherence in critical units outside Brazil⁽⁵⁾. Studies also indicate that higher levels of self-efficacy are associated with better adherence to hand hygiene practices among nursing professionals⁽⁶⁾.

These results demonstrate that, even with clear guidelines from the WHO

and Brazilian health authorities, implementation still faces structural, institutional, and behavioral barriers; these barriers are intertwined and complex, encompassing behavioral, social/interpersonal, physical, and organizational components that require multifaceted approaches to overcome⁽⁷⁾. Hand hygiene plays a critical role in the five moments defined by the WHO, and its continuous reinforcement, together with ongoing education and the provision of supplies such as alcohol gel at points of care, is essential to strengthen patient safety.

In the Midwest region of Brazil, the second least densely populated region in the country with 10.63 inhabitants per km²⁽⁸⁾, factors such as the geographical dispersion of the population and poor health infrastructure in rural areas intensify the vulnerability of health systems. These structural challenges can compromise basic infection control practices, such as hand hygiene, especially in less complex units with limited resources⁽³⁾.

In addition, studies show that adding institutional accountability and goal setting to the WHO multimodal model increased and maintained hand hygiene adherence above 90%, even with reduced resources. Simple interventions based on illustrative warnings, such as dispensers that light up or emit warning sounds as reminders, have been shown to improve hand hygiene practices by making it an "automatic" action, and training that includes visual feedback via UV technology has increased

adherence among nursing students by about 13 percentage points^(10,11). The multifaceted and non-invasive monitoring approach has good results and demonstrates that the habit is generated behaviorally, organizationally, and in the physical space, thus requiring a joint approach⁽⁷⁾.

Given this, it is necessary to investigate how this practice has been addressed in the scientific literature. This systematic review aims to analyze studies conducted in the Brazilian Midwest on hand hygiene in health services, considering the demographic and structural specificities of the region, as well as its implications for patient safety and infection control.

METHOD

This literature review aimed to gather and analyze scientific publications on the theme of "hand hygiene in the Brazilian Midwest of Brazil." To this end, a search was conducted using Google Scholar, selected for its scope and versatility, which allows access to multiple scientific repositories and different types of documents, including full articles, monographs, dissertations, theses, and even conference proceedings^(12,13,14).

The following descriptors/keywords were used: "aseptic technique," "hand washing," "hand hygiene," "Midwest," "Goiás," "Mato Grosso," "Mato Grosso do Sul," and "Federal District." The search strategy combined these terms using the Boolean operators "AND" and

Literature Review

Ferreira KB, Villagran CA, Sperandei VF

Hand Hygiene Among Healthcare Professionals in the Central-West Region: A Scientometric Analysis

“OR” to refine the results and broaden the scope of the search.

Scientific works in the formats of full article or scientific note, book chapter, expanded abstract, monograph (final course work), dissertation, or thesis were considered eligible, provided they addressed the topic of hand hygiene and were related to the Midwest region. There were no restrictions on the year of publication, and the language limitation was related to the exclusive inclusion of descriptors in the Portuguese language. The inclusion criteria involved the availability of the full text and the presentation of empirical, descriptive, or analytical data on the proposed theme. Duplicate studies, those irrelevant to the geographical or thematic focus, and publications with restricted access were excluded.

The screening and selection of studies followed the guidelines of the PRISMA 2020 model⁽¹⁵⁾. The articles were analyzed by at least two researchers, who extracted information regarding the main author, year of publication, type of document, methodological approach (qualitative or quantitative), data collection location, and target audience profile. The information was organized in a data matrix for systematization and comparative analysis.

RESULTS

This systematic review identified and analyzed 12 studies published between

2006 and 2025 that address the topic of hand hygiene in the Midwest region of Brazil. After the search, screening, eligibility, and inclusion stages, the data were

organized according to Table 1, and the selection of studies was systematized in Figure 1, according to the PRISMA 2020 model.

Figure 1: PRISMA 2020 of the systematic review for the theme "handwashing in the Brazilian Midwest region."

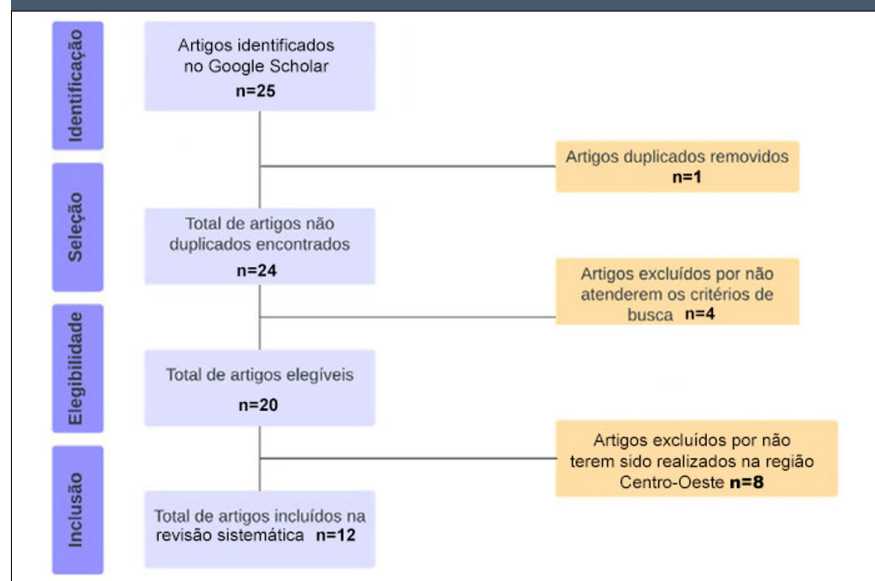


Table 1 presents the data matrix containing the main characteristics of the included studies, such as lead author, title, year, type of publication, methodology, collection site, and approach (qualitative or quantitative). The descriptive analysis revealed that most studies (8 out of 12; 66.6%) adopted a quantitative methodology, focused on the objective measurement of variables, allowing for a robust

statistical analysis of the factors that influence adherence. This predominance of quantitative studies suggests a greater interest in the objective measurement of behaviors related to hand hygiene. The remaining studies (4 out of 12; 33.3%) used qualitative approaches, focusing on the perceptions and experiences of the participants.

Table 1: Data matrix of the 12 articles selected by the systematic review for the theme "hand hygiene in the Brazilian Midwest."

Author	Title	Year of publication	Type of publication	Method	Data collection location	Methodological approach
Amorim et al.	Hand hygiene and influenza prevention: knowledge of health students	2018	Full scientific article	Structured questionnaire	Federal Institute of Goiás (IFGoiano)	Quantitative
Azevedo	Impact of the multimodal strategy for improving hand hygiene in a specialized hospital in Brasília/DF	2014	Monograph	Observation in a hospital setting	Specialized hospital	Quantitative
Silva & Cardoso	The importance of hand hygiene for patient companions	2021	Full scientific article	Narrative review	Scientific literature	Qualitative
De Moura & Damasceno	Educational practices of the Emergency Education Center in the interior of Goiás	2022	Book chapter	Descriptive study	Undetermined	Qualitative

De Melo Alves et al.	Health education: health professionals' knowledge about IRAS and hand hygiene	2019	Full scientific article	Observation in a hospital setting	Hospital – Intensive Care Unit (ICU)	Quantitative
Guadagnin et al.	Architctural evaluation of Material and Sterilization Centers in hospitals in the interior of the state of Goiás	2007	Full scientific article	Descriptive study	Technical visit to hospitals	Quantitative
Primo et al.	Adherence to hand hygiene practices by healthcare professionals at a university hospital	2010	Full scientific article	Descriptive study	University hospital	Quantitative
Rezende	Adherence to hand hygiene and the use of personal protective equipment by nursing professionals in primary health care	2013	Full scientific article	Descriptive study	Primary Health Care Unit (PHCU)	Qualitative
Schirmer et al.	Playful strategies "Magic Box and Gel" applied in adolescent learning about hand hygiene	2024	Experience report	Descriptive study	State technical school	Qualitative
Tipple et al.	Simple hand hygiene technique: practice among nursing students	2010	Full scientific article	Descriptive study	Higher education institution (HEI)	Quantitative
Melo & Tipple	Hand hygiene: adherence among future healthcare professionals	2006	Expanded abstract	Descriptive study	Higher education institution (HEI)	Quantitative
Tipple et al.	Hand hygiene: teaching and practice among undergraduate health students	2007	Full article	Descriptive study	Higher education institution (HEI)	Quantitative

Regarding the data collection environment, it is noteworthy that 5 studies (41.6%) were conducted in hospitals and educational institutions, and 2 (16.6%) were based on secondary data from the literature or were not determined. The diversification of collection environments highlights the scope of the investigations, covering everything from the hospital context to the educational and community spheres, which broadens the understanding of hygiene practices at different levels of health care.

Regarding the target audience, health professionals (54.5%) predominated as the focus of the investigations, including studies conducted in hospitals, ICUs, and primary care settings. A significant portion of the studies (36.4%) focused on health academics, especially undergraduate students in nursing and related areas. In addition, there are investigations that include patient companions (9.1%) and adolescents in technical schools (9.1%), evidencing an expansion of the target audience beyond the professionals directly involved in care.

Regionally, a concentration of

studies was identified in the state of Goiás, especially in the metropolitan region of Goiânia (58.3% of the total records), while the interior of Goiás, the Federal District, and Mato Grosso were underrepresented with only one scientific record each (8.3% each). No specific studies were found to have been conducted in Mato Grosso do Sul, which highlights an important geographical gap in scientific production on the topic, indicating the need to encourage research in less covered regions.

DISCUSSION

The analysis of the data reveals that, despite the theoretical knowledge about hand hygiene being present among health professionals and academics, practical adherence to the technique is still unsatisfactory, especially in primary care units and less complex services⁽¹⁶⁾. This discrepancy may be associated with a shortage of resources, work overload, low access to continuing education, and a lack of institutional incentives, factors that have been widely documented as significant barriers to the effective

implementation of hygiene practices ((17)).

The lack of specific data from Mato Grosso do Sul, for example, may reflect low regional scientific production, hindering the development of public policies tailored to local particularities. Studies such as those by Amorim et al.⁽¹⁸⁾ and Azevedo⁽¹⁹⁾ point out that continuous training of professionals, combined with educational strategies and institutional awareness campaigns, is essential to promote behavioral change and increase adherence to the practice, especially in environments with limited resources.

Although hand hygiene is a simple, low-cost measure widely recognized as effective in preventing infections^(18, 20), its implementation faces several cultural, structural, and managerial challenges that limit effective adherence. Behavioral barriers, such as lack of awareness and continuity, associated with inadequate infrastructure conditions, such as insufficient alcohol gel dispensers and sinks, compromise the effectiveness of preventive strategies^(19, 21).

The results reinforce the urgent

Literature Review

Ferreira KB, Villagran CA, Sperandei VF

Hand Hygiene Among Healthcare Professionals in the Central-West Region: A Scientometric Analysis

need for ongoing educational actions, with a focus on continuous training of professionals and the community, improvement of infrastructure, and constant monitoring of adherence to good practices^(22, 23). In addition, the importance of hand hygiene should extend beyond the hospital environment and be promoted in educational institutions, primary health care units, and communities, recognizing its fundamental role in promoting health at multiple social levels^(24, 21).

Thus, the integration of educational, administrative, and social strategies is essential to strengthen the culture of hand hygiene and reduce the rates of healthcare-associated infections.

In view of this, it is necessary to expand scientific production on the topic, especially in the less represented states of the Midwest region, and to promote the development of

evidence-based public policies that strengthen the culture of patient safety and encourage adherence to good hand hygiene practices at all levels of care. This expansion will not only promote greater equity in knowledge but also enhance the development of interventions contextualized to regional realities, contributing to improving the quality of care and reducing healthcare-associated infections.

CONCLUSION

Hand hygiene is recognized as an essential practice for the prevention of infections in health services, but its adherence in the Midwest region of Brazil is still limited by structural, institutional, and behavioral barriers. The concentration of scientific production in metropolitan areas, especially in Goiânia, and the absence of studies in states such as Mato Grosso

do Sul highlight gaps that compromise the development of contextualized interventions.

The findings reinforce the need for integrated strategies involving continuing education, infrastructure improvements, and systematic monitoring of the practice, extending its reach beyond the hospital environment to include basic health units, schools, and communities. Building an effective patient safety culture depends on the articulation between technical training, institutional engagement, and attention to regional specificities.

Thus, expanding regionalized research and promoting evidence-based public policies are essential steps to strengthen adherence to hand hygiene, improve the quality of care, and reduce the incidence of healthcare-associated infections in the Midwest region.

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