Hand Hygiene indicators and strategies in Medical Day Care in Salvador, BA

Indicadores e estratégias da higiene das mãos em Hospital Dia

Indicadores y estrategias de Higiene de las Manos en Centros de Día

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ABSTRACT: Objective: To analyze hand hygiene (HH) adherence indicators among healthcare professionals in a medical day care (MDC) and present strategies used to encourage this practice. **Method:** A cross-sectional and descriptive study was conducted in an MDC located in Salvador, Bahia. Data collection consisted of document analysis and internal audit data on HH practice from 2016 to 2023. **Results:** HH adherence rates ranged from 39.4 to 81.4%, with an average of 63.9%. Among the evaluated healthcare professionals, nurses showed the highest HH adherence (74.3%), followed by nursing technicians (71.1%) and physicians (50%). Multimodal strategies to encourage HH in this service included HH training, with systematic evaluation conducted by nursing coordinators. **Conclusion:** The HH adherence rates presented are higher than those reported in the literature but below the standardized goal of 70% in the MDC studied, confirming that the implementation of this apparently simple practice is a complex, multi-causal issue that requires coordination between management policies as well as scientific knowledge in building a culture in favor of this practice in healthcare organizations.
Keywords: Hand hygiene. Day care, medical. Cross infection. Patient safety.

RESUMO: Objetivo: Analisar indicadores de adesão à higienização das mãos (HM) dos profissionais de saúde de um hospital dia (HD) e apresentar estratégias utilizadas para incentivo dessa prática. **Método:** Pesquisa transversal e descritiva realizada em um HD localizado em Salvador, Bahia. A coleta de dados constou de análise documental e dos dados das auditorias internas da prática de HM entre 2016 e 2023. **Resultados:** Identificaram-se percentuais de adesão à HM de 39,4 a 81,4% e média de 63,9%. Dos profissionais de saúde avaliados, os enfermeiros apresentaram a maior adesão à HM (74,3%), seguidos dos técnicos de Enfermagem (71,1%) e dos médicos (50%). As estratégias multimodais para incentivo à HM adotadas nesse serviço incluíram habilitação em HM, com avaliação sistematizada realizada pelas coordenações de Enfermagem. **Conclusão:** Os percentuais de adesão à HM apresentados são maiores do que os reportados na literatura, mas abaixo da meta de 70% padronizada no HD estudado, ratificando que a implementação dessa prática, aparentemente simples, é tema complexo, multicausal e que requer articulação entre as políticas de gestão, bem como conhecimento científico na construção de uma cultura em prol dessa prática nas organizações de saúde.
Palavras-chave: Higiene das mãos. Hospital dia. Infecção hospitalar. Segurança do paciente.

RESUMEN: Objetivo: Analizar los indicadores de adherencia a la higiene de las manos (HM) entre profesionales de la salud de un hospital de día (HD) y presentar las estrategias utilizadas para incentivar esa práctica. **Método:** Investigación transversal y descriptiva, realizada en un HD ubicado en Salvador, Bahía. La recolección de datos consistió en el análisis documental y de los datos de las auditorías internas de la práctica de HM entre 2016 y 2023. **Resultados:** Se identificaron porcentajes de adherencia a la HM que oscilaron entre el 39,4% y el 81,4%, con un promedio de 63,9%. De los profesionales de la salud evaluados, los enfermeros presentaron la mayor adherencia a la HM (74,3%), seguidos de los técnicos de enfermería (71,1%) y los médicos (50%). Las estrategias multimodales para estimular la HM adoptadas en este servicio incluyeron la capacitación en HM, con evaluación sistemática realizada por los coordinadores de enfermería. **Conclusión:** Los porcentajes de adherencia a la HM presentados aquí son superiores a los reportados en la literatura, pero están por debajo del objetivo del 70% estandarizado en el HD estudiado, lo que confirma que la implementación de esta práctica, aparentemente simple, es un tema complejo, multicausal y que requiere articulación entre las políticas de gestión, así como conocimiento científico en la construcción de una cultura a favor de esta práctica en las organizaciones de salud.
Palabras clave: Higiene de las manos; Centros de Día; Infección hospitalaria; Seguridad del paciente.

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INTRODUCTION

Healthcare-associated infections (HAIs) represent a significant public health concern and rank as the most prevalent adverse events in the provision of healthcare globally. They contribute to heightened morbidity and mortality rates, prolonged hospital stays, and substantial financial burdens on healthcare systems worldwide. These occurrences inflict additional distress upon affected patients, exacerbate antimicrobial resistance, and result in avoidable fatalities[1-3].

Annually, hundreds of millions of patients worldwide acquire HAIs, with 5 to 10% of all patients acquiring nosocomial infections universally. Prevalence rates escalate to 20 to 30% among patients admitted to Intensive Care Units (ICUs). Data sourced from the World Health Organization (WHO) reveal that for every hundred hospitalized patients, at least one will acquire a healthcare-associated infection[4].

Microorganisms responsible for HAIs are primarily transmitted via contaminated hands of healthcare professionals during patient care. Consequently, strategies aimed at promoting adherence to hand hygiene (HH) represent a primary objective for infection control efforts within healthcare services worldwide[5,6].

Contamination of the hands of healthcare professionals can occur through direct contact with patients or indirectly via contact with environmental surfaces, which serve as vectors for cross-transmission. A single manual contact with a contaminated surface can lead to the transfer of pathogens to varying degrees[7]. Research indicates that contaminated hands have the potential to transfer viruses to up to five additional surfaces or to 14 other individuals. Moreover, contaminated hands can serve as a source of recontamination for surfaces[7-9].

The WHO recommends HH at five key moments in healthcare: before touching patients, before performing a clean/aseptic procedure, after exposure to bodily fluids, after touching patients, and after touching surfaces close to patients. These guidelines are aimed at moments of heightened risk for microorganism transmission, irrespective of visible dirt on the hands[6-10].

Despite recommendations, adherence to HH among healthcare professionals has been deemed unacceptably low by public health authorities. Literature reports indicate average adherence rates of 40% in high-income countries and less than 20% in low-income ones[5,11,12].

A systematic review study assessing HH adherence among healthcare professionals in hospital settings revealed an average adherence rate of 40%. Compliance rates were lower in Intensive Care Units (ICUs) (average of 30-40%) compared to other hospital services (average of 50-60%). Adherence rates were also lower among doctors (32%) compared to nurses (48%), and lower before patient contact (21%) compared to after contact (47%)[13].

In Brazil, an integrative review study revealed low rates of adherence to HH among healthcare professionals in Brazilian hospitals, ranging from 8.5% to 54.2%[14].

Due to the complexity of care and the profile of hospitalized patients — which contribute to high rates of HAIs — ICUs are the most studied services regarding adherence to HH. However, it is essential that the issue of HH remains a continuous concern for professionals working in infection control services as well as healthcare professionals providing direct patient care, across all healthcare settings.

In this regard, medical day cares (MDC) are often overlooked in terms of adherence to HH, either due to limited data availability on this topic or the unique nature of their care dynamics. These institutions typically facilitate same-day hospital discharge for patients, predominantly comprising individuals without comorbidities. With high patient turnover and shorter surgical procedures, there is a lower risk of complications. However, this does not preclude the transmission of pathogens during a patient's stay.

OBJECTIVE

In light of this context, the present study sought to analyze indicators of adherence to HH by healthcare professionals in an MDC. Additionally, the study aimed to present and discuss the strategies employed within the institution to promote and encourage this essential practice.

METHOD

This study is a cross-sectional, descriptive, quantitative investigation conducted in an MDC situated in Salvador, Bahia.

This MDC is a privately operated healthcare institution specializing in outpatient surgical and endoscopic procedures. It performs approximately 1,000 surgeries per month, totaling an average of 12,000 surgical procedures annually, along with 17,000 endoscopic procedures/year.

Within this institution, the Hospital Infection Control Service (HICS) operates under an action program. Among its

key activities is the implementation of the institution's HH policy, facilitated through the Clean Hands Project (*Projeto Mãos Limpas*), which was initiated in 2016, setting a standardized target for adherence to hand hygiene at 70%.

Data collection was carried out by the researchers between January and March 2023, through document analysis methodology. It involved evaluating the plans of *Projeto Mãos Limpas* spanning from 2016 to 2023, as well as data extracted from internal audit reports on HH practices within the institution.

During these audits, which occur every six months and are conducted by HICS nurses and nursing interns, the assessment instrument recommended by the WHO is utilized. This instrument evaluates opportunities for healthcare professionals to perform HH during the five key moments of care.

These on-site observations, conducted in a "shadow" manner (where observers do not interact with the observed), took place across various work shifts. Data recorded during these observations included the professional category, the timing of HH, and whether it was performed using alcohol-based hand rub or soap and water, or if it was not performed at all. The HH technique itself was not evaluated.

The collected data were inputted into an electronic spreadsheet using the Microsoft Excel program. HH adherence rates were calculated using the following formula: the number of actions performed divided by the number of opportunities evaluated, multiplied by 100, for the given period.

This study utilized primary and unpublished data and did not involve interviews with individuals, either individually or collectively. Therefore, according to Article VII of Resolution No. 466/2012 regarding research ethics, it was not necessary to submit the study to the Research Ethics Committee. However, contact was made with the Board of the MDC to explain the research objectives and obtain permission to conduct the study. Confidentiality of the collected data was assured, and the study was approved by the institution's Ethics Committee under number 3/2023.

RESULTS

In 2016, to initiate *Projeto Mãos Limpas*, a group was established comprising both direct and indirect patient care professionals. This group, formally designated by senior management for a 1-year term, was titled the "Clean Hands Team" (*Time de Mãos Limpas* – TML). The primary objectives of TML were to disseminate the planned actions and to foster a shared sense of responsibility among staff for the practice of HH.

TML professionals received training from HICS nurses on the proper technique for HH and the five recommended moments for HH, as well as fostering communication among team members. This communication was facilitated through a dedicated WhatsApp® network established for relevant matters.

Every week, HICS "challenges" TML via the WhatsApp® group. These challenges include tasks such as monitoring the replacement of alcohol solutions in dispensers at their workplaces, assessing the condition of HH posters placed at central points and hygiene sinks with soap and water, and replicating the HH technique for other hospital professionals.

In 2021, the project implemented a structured assessment of HH practices within the institution. This included introducing the Hand hygiene certificate of qualification (Figure 1) and adopting a classification system for assessing the adequacy levels of HH among the institution's nursing team.

Consequently, every semester, the nursing coordination of the care units evaluates its team of technicians based on their HH practices, according to two criteria:

- HH technique;
- Carrying out HH according to the five recommended moments during healthcare.

This process, conducted during the work activities of the individuals being evaluated, leads to the "qualification" of the nursing team (including both technicians and nurses) into three levels of HH:

- Level 1 — Bronze: Nursing professional demonstrates inadequacy in the correct HH technique and in the five HH moments;
- Level 2 — Silver: Nursing professional demonstrates inadequacy in the correct HH technique or in the five HH moments;
- Level 3 — Gold: Nursing professional demonstrates adequacy in the correct HH technique and in the five HH moments.

Figure 1. Hand hygiene certificate of qualification.

Nursing professionals evaluated as qualified in HH at Bronze or Silver levels are directed for "rehabilitation" in HH by TML. Those assessed as qualified in hand hygiene at Bronze or Silver levels during two consecutive or alternating assessments are referred for "re-qualification" by HICS. Professionals assessed as qualified in HH at Bronze or Silver levels during three consecutive or alternating assessments are subject to applicable administrative measures.

In 2023, *Projeto Mãos Limpas* incorporated professionals known as a "hidden member" to evaluate HH practices in each care unit, appointed by the Nursing coordination for a period of 6 months, after which they are replaced. Before commencing their activities, "hidden members" are trained by HICS.

"Hidden members" responsible for evaluating HH practices operate covertly, and their identity remains undisclosed to the Nursing team. Engaging in work activities, they assess the HH practices of at least three professionals from the Nursing team on one designated day of the week. These assessments are documented on forms specifically designed for this purpose. At the end of each month, four observation forms are forwarded to HICS, establishing a direct connection with this department.

Internal audits of HH practice by healthcare professionals produce reports containing epidemiological indicators of HH adherence within the institution. These reports are deliberated upon with senior management, professionals from the Patient Safety Center (PSC), unit coordinators, and the institution's technical staff. Table 1 displays adherence to HH across different observation periods.

Throughout internal HH audits conducted between 2017 and 2023, a total of 5,632 HH opportunities, as outlined in the WHO data collection form, were identified. Among these opportunities, 3,602 instances of HH were performed during various care activities, with an average adherence to this practice of 63. 9%, as indicated in Table 1.

Table 2 illustrates the HH indicators categorized by the observed health professionals during these audits. It was determined that nurses adhered to HH practices in 74.3% of care instances, nursing technicians in 71.1%, and doctors in 50%.

Table 1. Adherence to hand hygiene *versus* years of observation. Medical Day Care. Salvador (BA), 2017–2023.

Year	Hand hygiene opportunities	Hand hygiene	Percentage of adherence to hand hygiene (%)
2017	668	439	65.7
2018	482	190	39.4
2019	1,559	692	44.4
2020	292	222	76.0
2021	827	650	78.5
2022	927	695	74.9
2023	877	714	81.4
Total	5,632	3,602	63.9

Table 2. Adherence to hand hygiene *versus* professional categories. Medical Day Care. Salvador (BA), 2017–2023.

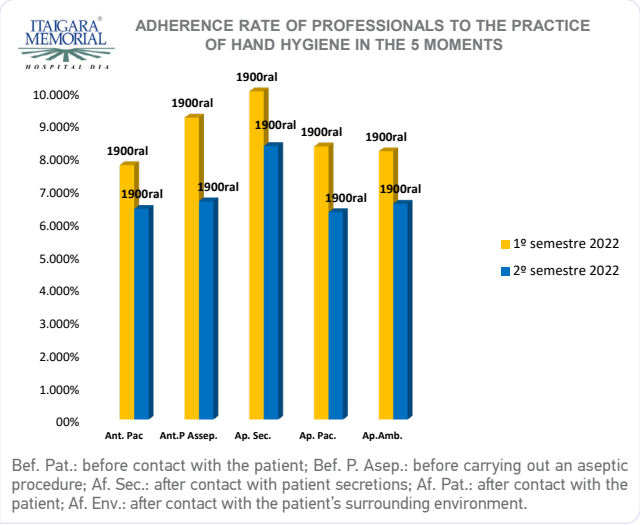
Year	Health professionals		
	Nurses HH/Total observed n (%)	Nursing Technicians HH/Total observed n (%)	Doctors HH/Total observed n (%)
2017	29/39 (74.3)	100/126 (79.3)	39/94 (41.4)
2018	12/27 (44.4)	29/60 (48.3)	11/47 (23.4)
2019	38/65 (58.4)	110/191 (57.5)	50/162 (30.8)
2020	15/17 (88.2)	78/113 (69.0)	53/80 (66.2)
2021	55/60 (91.6)	110/133 (82.7)	48/78 (61.5)
2022	33/42 (78.5)	96/126 (76.1)	47/77(61.0)
2023	33/39 (84.6)	65/78(83.3)	62/82(75.6)
Total	215/289 (74.3)	588/827 (71.1)	310/620 (50.0)

HH: hand hygiene.

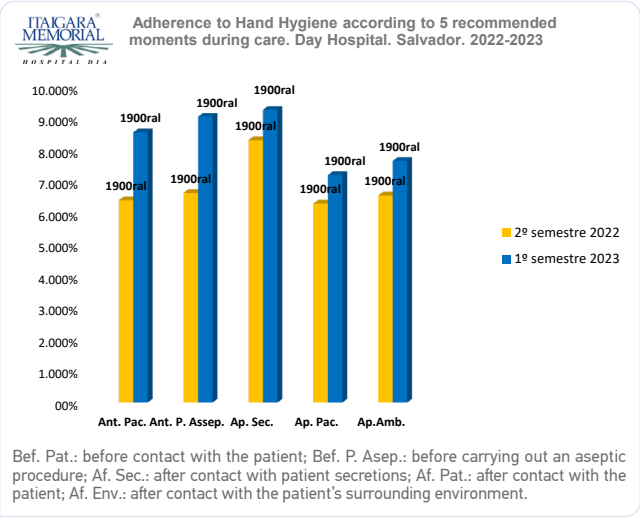
Monitoring HH during the five moments recommended by the WHO was introduced in the audits of this MDC from 2022 onward. Graphics 1 and 2 depict these practices.

DISCUSSION

The HH adherence indicators identified between 2017 and 2023 exhibited a percentage variation ranging from 39.4% (2018) to 81.4% (2023), with an average adherence rate of 63.9%.



Graphic 1. Adherence to hand hygiene according to the five recommended moments during care. Medical Day Care. Salvador (BA), 2022.



Graphic 2. Adherence to hand hygiene according to the five recommended moments during care. Medical Day Care. Salvador (BA), 2022–2023.

Despite falling below the HH adherence target of 70% set by the institution, it surpasses figures reported in international literature. For instance, a study indicated an average HH adherence of 40% in high-income countries and less than 20% in low-income countries[5].

When compared with national publications, the overall HH adherence rate of 63.6% in this study surpasses percentages reported in Brazilian hospitals, such as 26.5[15], 29.0[16], and 31.5%[17]. This notable disparity in indicators may be attributed to the different methods adopted for observing HH practices in healthcare services, as highlighted by Vermeil et al[12]. However, notwithstanding these considerations, the HH adherence indicators in the MDC under study surpass those identified in both global and national literature, pointing to the effectiveness of the HH policy implemented within this institution.

Among the health professionals evaluated, it was observed that adherence to HH was highest among nurses (74.3%), followed by nursing technicians (71.1%), and doctors (50%). These findings confirm the literature's assertions that associate professionals of the Nursing team as leaders in HH practice within healthcare services.

The category of doctors exhibited the lowest rate of adherence to HH practice, (23.4 to 75.6%) and an average of 50% during the evaluated period. This aligns with the findings of the study by Mota et al.[18], which demonstrated an incidence of HH adherence of 11.2% and suggested that "being a doctor was associated with low adherence to hand hygiene."

When assessing professionals' adherence to HH during the five moments recommended by the WHO, which are considered high risk for the transmission of microorganisms, this study identified percentages greater than 60% for all moments, particularly the moment "after contact with fluids and secretions from the patient's body," which exhibited the highest rates of HH (100, 83, and 93%), underscoring the concern of healthcare professionals regarding avoiding contamination with pathogens originating from patients. Similar findings were also noted in the study conducted by Zottele et al.[19].

The second most frequently observed moment for HH occurred before performing aseptic procedures, with adherence rates of 92, 67, and 91%. This underscores the quality of care delivered by professionals at this institution. These findings contrast with those of a Brazilian study[17], which aimed to ascertain the adherence of healthcare professionals in an ICU across five moments of HH. The study identified lower

rates of adherence to HH "before contact with patients" (18.4%) and "before aseptic procedure" (20.9%).

The HH incentive strategies outlined here are innovative in their approach. They complement the conventional training of professionals and the posting of HH recommendation posters by introducing *"Time de Mãos Limpas."* This team utilizes real-time communication via WhatsApp® to address HH-related demands within the institution promptly. Additionally, it establishes a network of political actors to advocate for and encourage this practice effectively.

Another strategy implemented in this MDC involves the systematic evaluation of the HH practices of the Nursing team. This evaluation is conducted by care unit coordinators, aiming to promote the socialization of a safety culture centered on clean hands. Additionally, it facilitates ongoing monitoring of the adequacy of the technique and the implementation of the five recommended moments for HH during patient care.

The multimodal strategies identified in this service have the potential to enhance the implementation of HH practices among health professionals. Studies indicate that isolated interventions are generally less effective than multiple interventions simultaneously[5].

The evaluation of HH practices by the Nursing coordination in this MDC entails the responsibility of systematic supervision of a practice deemed both simple and effective for ensuring quality care. This responsibility aligns with the inherent competence of nurses.

The establishment of "HH qualification" levels — level 1 (Bronze), level 2 (Silver), and level 3 (Gold) — introduces a technological framework for evaluating HH practices and a relearning system that involves professionals from various departments across the organization. This collaborative effort is coordinated by the Nursing Coordination, TML, Infection Control, PSC, and senior management. It aims to solidify a culture of HH within the institution, aligning with authors[20] who suggest that the engagement of healthcare unit leaders positively impacts the improvement of HH adherence rates.

Another essential and highly beneficial element for enhancing and sustaining improvement rates in HH is providing feedback on these practices as a continuous education tactic. Feedback enables the identification of gaps and facilitates the implementation of actions aimed at behavior change[16].

The HH adherence rate of 63.9% identified in this study, while surpassing literature benchmarks, requires further encouragement to meet the institutional target of 70%. It emphasizes that, beyond the strategies implemented in this MDC, the challenge of HH adherence is a daily, continuous endeavor and should be a collective objective for all health professionals.

The evaluation of the HH technique and whether hands were cleaned with soap and water or an alcohol solution was not conducted in this study. This omission prevented further analysis and constituted a notable gap in the research.

CONCLUSION

This study successfully achieved its objective by analyzing the epidemiological indicators of adherence to HH within an MDC. It contributes valuable data on this topic within this specific care segment. Additionally, the study presented the multimodal strategies adopted in this institution to promote and encourage the practice of HH.

The adherence percentages to HH presented in this study exceed those reported in the literature but fall below the standardized target within the studied MDC. This underscores that implementing this seemingly simple practice is a complex, multifaceted issue, that requires coordination between management policies and leveraging scientific knowledge to cultivate a culture supportive of this practice within healthcare organizations.

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CONFLICT OF INTERESTS

The authors declare there is no conflict of interests.

AUTHORS' CONTRIBUTION

EAMC: Project administration, Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Writing – original draft, Writing – review & editing, Software, Supervision, Validation, Resources, Visualization. LLLM: Project administration, Formal analysis, Data curation, Investigation, Methodology, Writing – original draft, Writing – review & editing, Software, Supervision, Validation, Resources, Visualization.

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