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Hand Hygiene Adherence in the Processing of Health Products: Facilitating and Hindering Factors

Adesão à higienização das mãos no processamento de produtos para saúde: fatores facilitadores e dificultadores

Adhesión a la higiene de manos en el procesamiento de productos para la salud: factores facilitadores y dificultadores

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ABSTRACT

Introduction: Hand Hygiene (HH) is an essential and effective measure for preventing healthcare-associated infections and is indispensable in all stages of Health Product (PPS) processing. Objective: To identify the facilitating and hindering factors for adherence to HH during the processing of PPS submitted to chemical disinfection. Methods: A descriptive, cross-sectional study conducted in a Class II Central Sterile Supply Department (CSSD) of a public teaching hospital. Participants included the unit's technical manager, bedside nurses, nursing technicians, and nursing assistants who had worked in PPS processing for more than six months. Two semi-structured instruments organized in a Google Forms questionnaire were used. Data collection occurred from June to August 2021. The study was approved by the Research Ethics Committee. Results: Most nursing technicians recognized the importance of training for HH; however, seven (64%) had not participated in these activities. Access to supplies was among the main facilitating factors, reported by five (36%). Conclusion: The lack of training related to HH practice emerged as one of the main hindering factors. Efforts should be directed toward professional training to achieve quality care and toward developing strategies to monitor adherence to HH.

KEYWORDS: Nursing team; Hand hygiene; Disinfection.

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INTRODUCTION

Disinfection is a process that eliminates microorganisms present on semi-critical Health Products (PPS)[1] which are those that come into contact with colonized mucous membranes or non-intact skin, such as endoscopes, laryngoscope blades, and respiratory care accessories, among others[2]. When subjected to the recommended disinfection process, they become safe for reuse [3].

For the processing of semi-critical PPS, intermediate- and high-level disinfection is recommended, differing in their spectrum of action. Intermediate-level disinfection inactivates vegetative bacteria, fungi, lipid-enveloped viruses, and some non-enveloped viruses[4]. High-level disinfection, in turn, eliminates vegetative bacteria, fungi, medium and small viruses, as well as some bacterial spores. These processes may be performed using physical methods, such as thermal washer-disinfectors, or chemical methods[3].

In the Central Sterile Supply Department (CSSD), a setting dedicated to PPS processing, disinfection can be performed using physical or chemical methods. However, chemical disinfection, widely used in many services, depends on direct contact between the disinfectant and surfaces and, when performed manually, presents risks of failures resulting from process variability and workers' exposure to toxic agents[5–6]. Such failures may compromise the microbiological quality of the products and favor infectious adverse events[4,7]. The literature demonstrates an association between infections and the processing of PPS involving high-level disinfection of semi-critical products [8].

In this context, hand hygiene (HH) is an essential measure to prevent cross-contamination during processing, ensuring the safety of professionals and users[9,4]. However, adherence to HH in the CSSD remains incipient and is scarcely explored in the literature. Most studies on HH focus on clinical units with direct patient contact, leaving a significant gap regarding its practice in technical support areas such as the CSSD, where handling potentially contaminated materials requires the same preventive rigor[10,11].

Therefore, this study aims to investigate the factors that facilitate or hinder adherence to HH during activities in the CSSD, which is responsible for reprocessing PPS, and to analyze adherence frequency based on the five moments recommended by the World Health Organization (WHO). In this way, this research may support strategies to encourage HH in a context that does not involve the patient's physical presence and is therefore often not specifically addressed in institutional policies that promote this practice.

METHODS

This is a descriptive, cross-sectional study with a quantitative approach, conducted with the objective of identifying factors that facilitate or hinder adherence to HH during the processing of PPS submitted to chemical disinfection. The study was developed in accordance with the recommendations of the STROBE guideline[12] (Strengthening the Reporting of Observational Studies in Epidemiology).

The study was conducted in a Class II CSSD (Central Sterile Supply Department) belonging to a public teaching hospital located in the Midwest region of Brazil. The CSSD is responsible for processing PPS used in different care units throughout the hospital.

Data collection took place between June and August 2021. All professionals assigned to the hospital's Class II CSSD who had worked in PPS processing for ≥ 6 months were invited to participate: the unit's technical manager, bedside nurses, nursing technicians, and nursing assistants. Professionals on leave or vacation during data collection were excluded. The sample was one of convenience, and participation was voluntary.

Two semi-structured questionnaires were used, developed for this study using the Google Forms® platform: (A) a form for the manager/technical supervisor and bedside nurses; and (B) a form for nursing technicians and assistants. Both instruments were evaluated by three infection control specialists regarding clarity, relevance, and adequacy to the study objective.

The variables analyzed in this study were grouped into different dimensions: sociodemographic and occupational, structural, process and knowledge, self-reported adherence, facilitating and hindering factors, and managerial indicators, aiming to characterize participants' profiles and understand the factors related to HH practice in the context of PPS processing.

Information was collected regarding sex, age group, professional category, length of experience in the department, and weekly workload. These data allowed characterizing participants' profiles and exploring possible associations between occupational characteristics and adherence to HH practices.

The physical structure and available resources in the work areas were assessed regarding the presence of sinks, availability of running water, soap, 70% alcohol, and paper towels. The positioning and accessibility of dispensers were also verified. This dimension aimed to identify whether environmental conditions favored or limited proper HH practice.

Regarding the process and knowledge dimension, questions addressed participation in specific HH training sessions, the timing of the most recent training, knowledge of the existence of a Standard Operating Procedure (SOP) related to HH, and the use of institutional strategies for promotion, with specification of actions when applicable.

Adherence was measured through the self-reported frequency of HH at different moments of the work process, based on the "Five Moments" recommended by the WHO, adapted to the CSSD context. Responses were recorded on a five-point Likert scale, allowing quantification of the declared frequency of adherence.

Open- and closed-ended questions were applied to identify facilitating or hindering factors associated with HH practice. Managerial indicators investigated the existence of institutional monitoring of HH adherence, the type of monitoring, and the frequency of this evaluation.

The link to the electronic form was sent to participants through an instant messaging application, after authorization and provision of contacts by the unit's technical manager. In cases of non-response after three attempts, the researcher contacted the professional by telephone and scheduled an interview at a convenient time.

Data were organized and analyzed using descriptive statistics, with categorization and presentation in quantitative tables, using Microsoft Excel® (version 2019). Variables were described as absolute and relative frequencies, as well as measures of central tendency when applicable.

Inferential statistical tests were not performed due to the small sample size, which would prevent obtaining results with statistical power. Moreover, the study has a descriptive and exploratory nature, with a non-probabilistic convenience sample, which limits the generalizability of the findings.

The study was conducted in accordance with Resolutions No. 466/2012 and No. 510/2016 of the National Health Council (Brazil, 2012; Brazil, 2016). The project was approved by the Research Ethics Committee of the Hospital das Clínicas of the Federal University of Goiás, under protocol No. 134892132.0000.5-78. Confidentiality, anonymity, and privacy of information were assured, with participation being voluntary and conditioned upon signing the Informed Consent Form.

RESULTS

A total of 16 (100%) professionals participated in the study, of whom 14 (88%) were female and 2 (12%) were male. Regarding professional category, 5 (31%) were nurses, 10 (63%) were nursing technicians, and 1 (6%) was a nursing assistant. Most participants, 7 (44%), were between 31 and 40 years of age, 1 (6%) between 41 and 50 years, 6 (38%) between 51 and 60 years, and 2 (12%) were over 60 years old.

With respect to length of experience in the department, most participants had worked in PPS processing for 1 to 10 years, totaling 11 (69%). Three (19%) had worked between 6 months and 1 year, 1 (6%) had 11 to 20 years of experience, and 1 (6%) had more than 20 years in the sector.

All professionals acknowledged the importance and need for training on HH in the unit. However, it was observed that 7 (64%) of nursing technicians and assistants had not participated in training sessions offered by the CSSD or the institution. In addition, most participants, 7 (64%), reported not being aware of the existence of an SOP related to HH moments in the chemical disinfection area. Table 1 shows the frequency of HH adherence among professionals working in the chemical disinfection sector of the CSSD.

Table 1. Frequency of Hand Hygiene Adherence Among Professionals Working in the Chemical Disinfection Sector of the CSSD in a Public Teaching Hospital in the Midwest Region of Brazil, Goiânia, GO, 2021.

Moments of hand hygiene with pre-established indication	N=16	%
Upon arriving at the CSSD unit	7	64
Before starting the work shift	10	91
Before and after preparing the environment at the workstations	9	82
Immediately before beginning and/or resuming activities in the work process	8	73
Before donning gloves and after removing them	6	54
Every hour of continuous work activities in the clean area	4	36
After finishing work processes	9	82
When leaving the unit	9	82
Before and after using a cell phone	3	27
Immediately before donning PPE	6	54
Immediately after doffing PPE	8	73
Before and after preparing the disinfectant solution	8	73
After monitoring disinfectant solution parameters	6	54
After discarding the disinfectant solution	10	91
Before handling packaging and health products	6	54
Before packaging PPS	6	54
Before handling the processed health product	6	54
After recording the unit's productivity	2	18

Legend: CSSD (Central Sterile Supply Department); PPS (Health Products).
Source: Authors.

Among bedside nurses, four (80%) reported not using any strategy to encourage adherence to HH in the chemical disinfection area, and three (60%) stated that they did not assess the team's adherence to the HH technique after training sessions.

The main facilitating factors reported for HH adherence in the chemical disinfection sector of PPS were: the physical structure with sinks designated for HH and the availability of supplies in accessible locations. The main hindering factors identified were: insufficient supplies and the lack of continuing education on the HH technique (Table 2).

Table 2. Facilitating and Hindering Factors for Hand Hygiene Adherence Reported by Professionals Working in the Chemical Disinfection Sector of the CSSD in a Public Teaching Hospital in the Midwest Region of Brazil, Goiânia, GO, 2021.

Facilitating factors	N=16	%
Available work time	1	7
Supplies available	5	36
Adequate physical structure	7	50
Recognizing the risk of contamination	1	7
Hindering factors	**N=16**	**%**
Lack of training and practice on the technique	5	36
Absence of implemented protocols and SOPs	1	7
Insufficient supplies and inadequate physical structure	6	43
Work overload	2	14

DISCUSSION

Access to supplies was among the main facilitating factors reported by workers. The literature shows that physical and structural conditions influence adherence to HH, and the adequate availability and arrangement of such supplies favors the practice and adherence to this important measure[13].

The ideal setting for promoting HH practices requires the availability of water, sinks, soap, and paper towels for simple handwashing, as well as the distribution of alcohol-based hand preparations (gel or solution) well positioned and close to work units[14,11].

According to Costa et al., [15] the work process in the CSSD presents specific configurations and workflow patterns compared with other activities within the hospital institution. Professionals are assigned to a sector where they perform the same sequential procedure for hours, and in this sense, consistent with other studies, there is a need for additional HH moments beyond those pre-established in clinical settings. Furthermore, based on the data, only four (36.4%) of the workers indicated performing HH every hour during continuous work activities in the clean area.

Higher HH adherence rates after exposure may reflect an attitude focused on self-protection, driven by the recognition of risk to one's own health[16]. However, this behavior represents an additional risk, as the transient microbiota present on workers' hands may be transferred to the product, facilitating the transmission of microbial load[17].

Training is among the factors that contribute to the lack of adherence to HH. In this regard, investment in the development of human resources in the CSSD becomes essential through continuing education, which enables constant updating and improvement of workers inserted in the field. Considering the increasing number of complex procedures and the use of advanced technologies in PPS processing, properly trained teams are fundamental to minimizing the risk of failures and ensuring the delivery of safe products for use by users[18].

Data from recent studies show that effective training on HH technique has a positive impact on the team's level of knowledge and influences their behavior in the work environment. Studies that implemented educational strategies with workers aimed to guide and encourage self-care, increase professional adherence to HH, and strengthen critical thinking regarding the significance of biological risk[4].

The absence of a specific SOP for HH in the CSSD, as reported by most professionals, reflects a lack of technical and managerial refinement. The SOP is an instrument that must be developed based on updated scientific references so that it is widely disseminated to workers and available for consultation when needed[4].

In addition, the SOP must include both the development of monitoring and control systems for PPS processing stages and the proposed use of quality indicators related to this processing. Regarding human resources, this document should provide for the promotion of training, continuing education, and performance evaluation of professionals working in the CSSD[5].

Alongside the SOP, the existence of tools for assessing adherence can assist in the adoption of good practices. The application of validated instruments enables the establishment of goals and managerial strategies based on the results obtained, as the feedback from the evaluation supports periodic monitoring with the ideal degree of reliability. Interventions should be adapted to the institutional reality, aiming at behavioral changes and improved processing performance, in addition to contributing to the prevention of work-related harm and promoting the safety of the patient and PPS[19,20,21].

As a limitation of this study, the reduced number of participants, restricted to a single hospital institution, stands out, which may limit the generalization of the findings to other care contexts. Despite this limitation, the study contributes by highlighting structural and behavioral factors that interfere with adherence to hand hygiene in the context of the CSSD, providing support for further research and for the improvement of continuing education strategies and monitoring of the practice.

Another factor that deserves attention concerns work overload, as it represents a significant barrier to HH adherence among health professionals. Alvim et al. emphasize that in high-demand contexts, such as the CSSD, workers are subjected to continuous and repetitive activities with reduced timeframes for completing PPS processing steps[22]. This situation favors the prioritization of productivity to the detriment of adherence to HH practices. Supporting this evidence, Chang et al. highlight that as workload increases, professionals tend to prioritize the execution of care tasks, neglecting HH and consequently compromising

the prevention of healthcare-associated infections (HAIs) [2 3]. In this regard, the authors stress that it is essential for managers to recognize the impact of working conditions on professional behavior and adopt measures that reduce work overload, such as appropriate staffing, implementation of scheduled breaks, and reorganization of workflow, thereby promoting a safe environment conducive to HH adherence.

CONCLUSION

The availability of supplies and the adequate physical structure for performing HH was recognized by workers as the main facilitating factor for the practice. In the institution evaluated, the supplies required for HH and the environment were in accordance with recommendations. The lack of training was identified by professionals as a hindering factor, and although most professionals did not participate in the educational activities promoted by the institution, continuing education is an essential tool for maintaining an up-to-date professional with practical foundations supported by scientific evidence.

Furthermore, the absence of an implemented SOP was also among the hindering factors for HH adherence, requiring special attention from managerial leadership for the development of strategies to monitor professionals' adherence to HH throughout operational stages, by identifying opportune moments for performing the technique according to the workflow dynamics in the CSSD sector. Managers should prioritize the evaluation and implementation of process and outcome indicators to improve HH practices during PPS processing, regardless of the method used. The study's findings provide support for practical recommendations, highlighting the importance of effective institutional policies for controlling HAIs.Furthermore, the absence of an implemented SOP was also among the hindering factors for HH adherence, requiring special attention from managerial leadership for the development of strategies to monitor professionals' adherence to HH throughout operational stages, by identifying opportune moments for performing the technique according to the workflow dynamics in the CSSD sector. Managers should prioritize the evaluation and implementation of process and outcome indicators to improve HH practices during PPS processing, regardless of the method used. The study's findings provide support for practical recommendations, highlighting the importance of effective institutional policies for controlling HAIs.

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AUTHOR CONTRIBUTIONS

Silva AR, Rodrigues CAP and Nascimento JCC made substantial contributions to the conception of the research, methodological and organizational design of the study, as well as to the critical review of the intellectual content. Neves HCC and Santos SLV made substantial contributions to the data analysis and to the review of the intellectual content. Mendonça KM made substantial contributions to the writing of the manuscript and to the discussion of the data.

RESEARCH ETHICS COMMITTEE APPROVAL

Not applicable.

CONFLICT OF INTERESTS

The authors declare no conflict of interest.