doi.org/10.37914/riis.v7i3.325
Research Article

Barriers to hand hygiene in na emergency service according to health professionals

Filomena Silva[1]

Pedro Costa[1]

Silvana Martins[2]

Fátima Braga[3]

[1]MSc., ULS Tâmega e Sousa - Penafiel, Portugal

[2]PhD., Unidade de Investigação em Ciências da Saúde: Escola Superior de Enfermagem de Coimbra, Portugal

[3]MSc., Escola Superior de Enfermagem da Universidade do Minho - Braga, Portugal

Abstract

Background: hand hygiene is considered the simplest and most effective measure to reduce healthcare-associated infections.
Objectives: analyze the perception of health professionals in an emergency service about barriers to good hand hygiene practices.
Methodology: quantitative, descriptive, correlational and cross-sectional study, developed in a medical-surgical emergency service in Portugal. Data collection using a sociodemographic characterization questionnaire and the application of the "Barriers to Adherence to Hand Hygiene" scale. 153 health professionals participated in the study. In processing the data, measures of central tendency, measures of dispersion, correlations, reliability studies and tests of differences in means were used. The study received a favorable opinion from the Health Unit's Ethics Committee.
Results: the Evaluation & Feedback is the most valued barrier, while Training & Training was the least relevant as a barrier to hand hygiene. Statistically significant differences were found in all sociodemographic variables, with the exception of gender.
Conclusion: knowledge of the barriers to hand hygiene practices allows us to identify weaknesses. Leadership involvement with the team is decisive for changing behavior.

Keywords: hand hygiene; cross infections; hospital emergency service

Submissão: 06/02/2023
Aceitação: 01/07/2024

Introduction

The provision of healthcare in an emergency department entails a specific dynamic, conditioned in part by the severity of the clinical situation of the person in critical condition, implying possible problems for patient safety. Inherent in the provision of care, healthcare-associated infections are a challenge for healthcare institutions, as they are referred to as the most prevalent adverse events because of hospital care practice (Direção-Geral da Saúde, 2017).

Hand hygiene (HH) is considered a fundamental practice and has long been recognized as the most effective measure for controlling the transmission of microorganisms, as well as being one of the main indicators of patient safety, regardless of the care setting. The World Health Organization (2009) highlights a direct relationship between adherence to proper MH and a reduced rate of healthcare-associated infections.

In this sense, the research aims to answer the research question 'What is the relationship between sociodemographic and professional variables and the perception of healthcare professionals in an emergency department about barriers to good hand hygiene practices?', to achieve the objective of analyzing the perception of healthcare professionals in an emergency department about barriers to good hand hygiene practices.

Background

Infection control, as an indicator of quality and safety of care, is unequivocally based on an individual, multidisciplinary and collective dimension, and it is therefore crucial that each health professional understands the importance of safe practice, based on high ethical standards, thus contributing to reducing the impact on patients' health, as well as the burden on health systems.

In this domain, it is important to highlight the concept of infection associated with healthcare as being all infections acquired by patients, while providing healthcare, in a hospital environment, clinics, health centers or nursing homes, also representing, the most frequent adverse event. (Thandar, 2022; World Health Organization, 2011).

Puro et al. (2022) state that most of these infections are preventable through Basic Infection Control Precautions (BICP), particularly adequate HH. Traditionally, this is considered the most effective measure in preventing and controlling healthcare-associated infections. However, some studies mention barriers that compromise HH adherence. However, some studies refer to barriers that compromise adherence to HH. In the literature, we identified some factors that contribute to non-compliance with HH as recommended by the World Health Organization (WHO). In the study developed by Kim et al. (2023), skin problems caused by HH products, the lack of knowledge, the lack of monitoring, as well as the lack of feedback on HH compliance, constitute barriers to HH adherence. Also, the insufficient number of sinks, the lack of soap and hand sanitizer gel, the lack of training of professionals are cited in the research carried out by Lien et al. (2018). The increased workload in an intensive care unit, (Chang et al., 2022), and the overcrowding of emergency services (Issa et al., 2023; Seo et al., 2019) affect HH, causing a decrease in your membership. To raise awareness among health professionals about this practice, and with a view to reducing hospital infections, the WHO developed the multimodal strategy, which proposes interventions aimed at all care contexts (World Health Organization, 2009). This comprehensive perspective arises from the awareness that a change in behavior sustained over time, bases its assumptions on the individual and motivational dimension, inherent to the individual perception of the problem in question.

Due to this intrinsic nature associated with behavioral change, it appears that health professionals are sometimes aware of the relevance of HH, although this does not mean that the results of compliance with it are satisfactory (Oliveira et al., 2019).

However, recent research has demonstrated the importance of promoting adequate adherence to this technique, with the aim of reducing the rate of infection by multi-resistant microorganisms. Graveto et al. (2018) and Seo et al. (2019) add that low adherence to this practice is still worrying, even being a challenge for professionals and health institutions.

In the emergency service, this problem is particularly complex, identifying as barriers to HH the high influx of patients, which contributes to the overcrowding of spaces, making the physical structure of the services inappropriate for an organized practice, promoting safety. of care. Belela-Anacleto et al., (2017) and Silva et al., (2020) also warn that some factors that hinder adherence to HH also involve work overload, patient complexity, lack of time, stress, safe facilities and finally the provision of care in emergency services.

Methodology

To address the research question, a quantitative, descriptive, correlational, and cross-sectional study was conducted in a medical-surgical emergency department in Portugal. This service responds to a geographical area that covers 12 municipalities, which have a population of 520,000 inhabitants, representing an average of 279 emergency episodes/day (Administração Central do Sistema de Saúde, 2021).

Regarding the selection criteria of this Institution, there was the convenience of access to study participants, as the main researcher develops his professional practice in this same context, therefore configuring a non-probabilistic convenience sampling process.

Participation in the study met the following inclusion criteria: nurses, operational assistants and doctors of all specialties, working in the emergency room, in the period between April and May 2021, corresponding to data collection.

A questionnaire with two distinct parts was chosen as the data collection instrument. he first part characterized the participants' sociodemographic and professional profiles, and the second part applied a scale evaluating healthcare professionals' perceptions of barriers to good HH practices (BAHM), validated for the Portuguese population in the study “Adesão à Higiene das Mãos. Barreiras Percecionadas pelos Profissionais de Saúde” (Pisoeiro, 2014). This Likert-type scale consists of 31 items grouped into five subscales: Evaluation & Feedback, Organizational Climate, Training & Education, Leadership & Formal Alerts, and Materials & Equipment. Item scores range from 1 (strongly disagree) to 6 (strongly agree), with higher scores indicating a greater perception of the impact of a barrier on HH adherence.

The present study received a favorable opinion from the Ethics Committee of the Hospital Institution where the study took place, as well as from the Ethics Committee for Research in Life and Health Sciences at the University of Minho. Regarding the use of the BAHM scale, a request for authorization was made to the author who validated it for the Portuguese population.

Still in the field of ethical procedures, an informed, free and informed consent model was developed in accordance with the Declaration of Helsinki (2008) and the Oviedo Convention (2001), with the purpose of informing the participant, regarding the procedures, type of study and purpose thereof. Participation was voluntary and the participant could withdraw at any time without being subject to a penalty.

Data analysis was performed using IBM SPSS (Statistical Package for the Social Sciences) software version 27 for Windows. Measures of central tendency and measures of dispersion (calculation of means and standard deviation), Pearson correlations, reliability studies and test of differences in means (Student's t-test, One-Way Anova) were used. The assumptions for carrying out these tests were ensured (Maroco, 2003; Pestana & Gageiro, 2003). The results were considered statistically significant at for $p < 0.05$.

Results

The sample consisted of 153 participants, 40% (n = 61) male and 60% (n = 92) female. Regarding the age variable, an average age was found to be 39.95 (SD = 10.72) years. In the description of the academic training variable, 52.9% (n=81) had an undergraduate degree, 24.3% (n=37) had a master's degree and 22.8% (n=35) had no higher education. Regarding the professional category, 38.6% (n=59) of the sample were nurses, 37.9% (n=58) doctors and 23.5% (n=36) operational assistants. Regarding total professional experience, the average was 11.01 (SD = 10.05) years. The average length of professional experience in the emergency room was 8.29 (SD = 8.8) years. Of the total participants, 73.5% had training in HH.

To better understand the trends regarding health professionals' perceptions regarding barriers to good HH practices, we performed descriptive statistics of the subscales that make up the questionnaire.

The mean value of the total scale was 3.02 (SD =. 717). Regarding the different subscales, the results showed that the Assessment & Feedback subscale (M = 3.80, SD = 1.11) was the one with the highest mean value, followed by the Leadership & Formal Alerts subscale (M = 3.45, SD = 1, 05). In contrast, the Training & Training subscale revealed the lowest mean value (M = 1.89, SD =. 647) (Table 1).

Table 1 Descriptive statistics for the scale and its dimensions

	N	M	SD	Min	Max
Total scale	153	3.02	.717	1	5.06
Evaluation & feedback	153	3.80	1.11	1	6
Organisational climate	153	2.47	1.25	1	6
Leadership & formal alerts	153	3.45	1.05	1	6
Training & Education	153	1.89	.647	1	4
Materials & equipment	153	3.09	1.10	1	6

Regarding the Evaluation & Feedback subscale, the item ‘I don't have easy access to data from the evaluation of hand hygiene results’ (M = 4.30, SD = 1.52) had the highest mean value. On the other hand, the item ‘There is no professional from the Infection Control Committee (Liaison) accessible in the service

for information/training’ (M = 3.21, SD = 1.58) had the lowest mean value (Table 2).

Table 2 Descriptive statistics for the evaluation & feedback subscale

	N	M	ST	Min.	Max
10. There are no periodic audits/observations.	153	3.55	1.46	1	6
11. There is no professional in the service/institution who informally evaluates hand hygiene practices daily.	153	3.97	1.53	1	6

12. The results of the assessment of hand hygiene adherence are not communicated, either in training or on posters.	153	3.94	1.58	1	6
13. No information is provided on the nosocomial infection rate of the services and the institution.	153	3.93	1.40	1	6
14. The results are not discussed in the service to assess what is going well and what could be improved.	153	4.10	1.48	1	6
15. I don't have easy access to hand hygiene results assessment data.	153	4.30	1.52	1	6
24. There is no professional from the Infection Control Committee (liaison person) accessible in the service for information/training.	153	3.21	1.58	1	6
25. There is no commitment from the professionals on the Infection Control Committee to encourage hand hygiene.	152	3.38	1.46	1	6

Regarding the Leadership & Formal Warnings subscale, we found that the item 'There are no sanctions for professionals who do not comply with hand hygiene' (M = 4.46, SD = 1.43) stood out as having the highest mean value. In this sub-scale, the lowest mean value (M = 2.63, SD = 1.20) corresponded to the item 'Recommendations on hand hygiene are not available/accessible in the service' (Table 3).

Table 3 Descriptive statistics of the leadership & formal alerts subscale

	N	**M**	**SD**	**Min.**	**Max**
17. There are no non-technical posters/reminders posted in the service/institution.	153	2.80	1.34	1	6
18. It's not. distributed publicity material for the hand hygiene campaign (flyers, pens, badges, calendar, bookmarks, etc.).	153	3.55	1.63	1	6
19. Hand hygiene recommendations are not available/accessible in the service.	153	2.63	1.20	1	6
20. The management body is not actively involved in promoting hand hygiene.	153	3.27	1.37	1	6
21. Middle management is not actively involved in promoting hand hygiene.	153	3.24	1.41	1	6
22. There are no incentives for professionals who comply with hand hygiene.	153	4.17	1.58	1	6
23. There are no sanctions for professionals who do not comply with hand hygiene.	153	4.46	1.43	1	6

From the analysis regarding the Materials & Equipment subscale, the items "There are not enough paper towels" stand out with the lowest average value (M = 2.77, SD = 1.44). On the other hand, the item "There is not enough moisturizing cream to apply to the hands" presented the highest mean value (M = 3.75, SD = 1.66) (Table 4).

Table 4 Descriptive statistics of the materials and equipment subscale

	N	M	ST	Min.	Max
1. There are not enough washbasins/soap dispensers available.	153	2.95	1.52	1	6
2. The location of the washbasins/soap is inadequate (far from where I need to wash my hands).	153	2.91	1.45	1	6
3. There are not enough paper towels.	153	2.77	1.44	1	6
4. There is not enough moisturizing cream to apply to your hands.	153	3.75	1.66	1	6
5. There is no alcohol-based antiseptic solution (SABA) with an automatic dispenser.	153	3.07	1.61	1	6

Regarding the Organizational Climate subscale, the item with the highest mean value (M = 2.68, SD = 1.60) was “I have many other things to do” and the item “There are always other priorities” (M = 2.13, SD = 1.32) presented the lowest value (Table 5). In this subscale, it was found that all items under analysis had mean values lower than 3.

Table 5 Described statistics of the organizational climate subscale

	N	M	ST	Min.	Max
26. I'm demotivated in my workplace.	153	2.52	1.52	1	6
27. I'm too busy with other cares.	153	2.66	1.60	1	6
28. I have too many other things to do.	153	2.68	1.60	1	6
29. I don't have time available.	153	2.35	1.43	1	6
30. There are always other priorities.	153	2.13	1.32	1	6

Finally, the analysis of the Training & Training subscale revealed that “The time invested in hand hygiene is useless” (M = 1.20, SD = .574) is the item with the lowest mean value, while “There are no technical posters (with the technique and the five essential moments) at hand hygiene points” (M = 2.84, SD = 1.54) was the one with the highest average value (Table 6).

Table 6 Descriptive statistics for the training & education subscale

	N	M	ST	Min.	Max
6. I don't know of any recommendations on hand hygiene in the institution.	153	2.16	1.25	1	6
7. There is no training in the institution on hand hygiene.	153	2.46	1.44	1	6
8. I feel that wearing gloves eliminates the need to sanitise my hands.	153	1.43	.825	1	5
9. The time invested in hand hygiene is pointless.	153	1.20	.574	1	5
16. There are no technical posters (with the technique and the five essential moments) at the hand hygiene points.	153	2.84	1.54	1	6
31. I don't want to sanitise my hands.	153	1.24	0.74	1	6

To understand the influence that some sociodemographic variables have on health professionals' perceptions of this issue, we found using the student’s t-test that there were no statistically significant differences between female and male participants with regard to the gender variable in the total scale and in the different sub-scales (Table 7).

Table 7 Difference between means according to the sex of the participants

	N	M	ST	t	p
Full scale					
Male	61	3.11	.630	1.190	.236
Female	92	2.96	.768		
Evaluation & feedback					
Male	61	3.81	1.04	.064	.949
Female	92	3.79	1.15		
Organisational climate					
Male	61	2.69	1.28	1.756	.081
Female	92	2.32	1.22		
Leadership & formal alerts					

Male	61	3.54	.949	.865	.388
Female	92	3.39	1.11		
Training & Education					
Male	61	2.01	0.63	1.872	.063
Female	92	1.81	0.647		
Materials & equipment					
Male	61	3.12	1.10	.254	.800
Female	92	3.07	1.11		

With regard to the Age variable, the results obtained from the One-way ANOVA show that in the subscales Organizational Climate (F (2, 150) = 4.648, p = .011), Evaluation & Feedback (F (2, 150) = 4.301, p = . 015), Leadership & Formal Alerts (F (2, 150) = 4.017, p = .020), Training & Education (F (2, 150) = 4.463, p = .013) and in the total scale (F (2, 150) = 6.060, p = .003), there were statistically significant differences. The differences in the results were between the 20-30 age group and the 41+ age group, compared to the 31-40 age group (Table 8).

Table 8 Difference between averages according to age groups

	N	M	ST	F	p	η2
Full scale						
20-30 years	51	2.76	.597	6.060	.003	.075
31-40 years	57	3.08	.723			
Over 41	45	3.24	.758			
Evaluation & feedback						
20-30 years	51	3.44	1.06	4.301	.015	.054
31-40 years	57	3.93	1.11			
Over 41	45	4.04	1.10			
Organisational climate						
20-30 years	51	2.16	1.07	4.648	.011	.058
31-40 years	57	2.39	1.35			
Over 41	45	2.91	1.23			
Leadership & formal alerts						
20-30 years	51	3.12	.932	4.017	.020	.051
31-40 years	57	3.55	1.03			
Over 41	45	3.69	1.12			
Training & Education						
20-30 years	51	1.67	.512	4.463	.013	.056
31-40 years	57	1.99	.650			
Over 41	45	2.01	.729			
Materials & equipment						
20-30 years	51	3.06	1.07	.61	.941	.001
31-40 years	57	3.08	1.13			
Over 41	45	3.14	1.12			

According to the results of the One-way ANOVA, the Professional Category also influenced the participants' perception of the object of study, with doctors having a higher mean value than the other categories. These statistically significant differences were in the sub-

scales Materials & Equipment (F (3, 149) = 3.461, p = .018), Evaluation & Feedback (F (3, 149) = 6.752, p = .000), Training&Education (F (3, 149) = 3.018, p = .032), and in the total value of the scale (F (3, 149) = 3.426, p = .019) (Table 9).

Table 9 Difference between averages according to professional category

	N	M	SD	F	p	η2
Full scale						
Generalist Nurse	48	2.87	.683	3.426	.019	.065
Specialist Nurse	11	3.13	.848			
Doctor	58	3.23	.670			
Operational Assistant	36	2.84	.726			
Evaluation & feedback						
Generalist Nurse	48	3.30	1.05	6.752	.000	.120
Specialist Nurse	11	3.78	1.41			
Doctor	58	4.22	.888			
Operational Assistant	36	3.78	1.18			
Organisational climate						
Generalist Nurse	48	2.36	1.25	.773	.511	.015
Specialist Nurse	11	2.51	1.09			
Doctor	58	2.66	1.38			
Assistente Operacional	36	2.29	1.11			
Leadership & formal alerts						
Generalist Nurse	48	3.27	.936	1.273	.286	.057
Specialist Nurse	11	3.81	1.21			
Doctor	58	3.58	.993			
Operational Assistant	36	3.37	1.20			
Training & Education						
Generalist Nurse	48	1.92	.691	3.018	.032	.057
Specialist Nurse	11	2.15	.724			
Doctor	58	1.97	.593			
Operational Assistant	36	1.63	.592			
Materials & equipment						
Generalist Nurse	48	3.27	1.03	3.461	.018	.065
Specialist Nurse	11	2.96	.752			
Doctor	58	3.27	1.22			
Operational Assistant	36	2.61	.951			

With regard to Academic Training, from the analysis of the One-way Anova results, we verified in the subscales Materials & Equipment (F (2, 150) = 3.669, p = .028) and Assessment & Feedback (F (2, 150)) = 3.514, p = .032) statistically significant differences. The mean values of participants who had completed their undergraduate studies were higher compared to those who did not attend higher education, in relation to the Materials & Equipment subscale. Regarding the Assessment & Feedback subscale, participants with a master's degree presented higher mean values compared to participants who had completed their undergraduate degree (Table 10).

Table 10 Difference between averages depending on academic training

	N	M	SD	F	p	η2
Full scale						
Non-higher education	35	2.88	.079	1.364	.259	.018
Bachelor's degree	81	3.01	.714			
Master's degree	37	3.16	.649			
Evaluation & feedback						

Non-higher education	35	3.81	1.22	3.514	.032	.045
Bachelor's degree	81	3.61	1.15			
Master's degree	37	4.19	.805			
Organisational climate						
Non-higher education	35	2.33	1.13	0.324	.724	.004
Bachelor's degree	81	2.53	1.28			
Master's degree	37	2.46	1.32			
Leadership & formal alerts						
Non-higher education	35	3.40	1.24	0.038	.963	.001
Bachelor's degree	81	3.46	1.02			
Master's degree	37	3.45	.92491			
Training & Education						
Non-higher education	35	1.70	.661	2.071	.130	.027
Bachelor's degree	81	1.94	.693			
Master's degree	37	1.96	.491			
Materials & equipment						
Non-higher education	35	2.66	1.03	3.669	.028	.018
Bachelor's degree	81	3.20	1.03			
Master's degree	37	3.25	1.22			

The analysis of the variable Total Professional Experience Time, using the application of One-way Anova, revealed in the subscales Education & Training (F (2, 150) = 4.207, p = .017), Leadership & Formal Alerts (F (2, 150) = 4.207, p = .017), Leadership & Formal Alerts (F (2, 150) = 3.261, p =. 041) and in the total scale (F (2, 150) = 3.635, p =. 029), statistically significant differences. The differences were between professionals with more than 10 years of professional experience and the group of those who had less than 5 years of professional experience (Table 11).

Table 11 Difference between averages depending on the number of years of professional experience

	N	M	SD	F	p	η2
Full scale						
Less than 5 years	59	2.86	.633	3.635	.029	.046
Between 5 and 10 years	41	3.00	.667			
More than 10 years	53	3.22	.803			
Evaluation & feedback						
Less than 5 years	59	3.70	1.15	.712	.492	.009
Between 5 and 10 years	41	3.75	.967			
More than 10 years	53	3.94	1.18			
Organisational climate						
Less than 5 years	59	2.29	1.23	2.397	.094	.031
Between 5 and 10 years	41	2.33	1.21			
More than 10 years	53	2.77	1.29			
Leadership & formal alerts						
Less than 5 years	59	3.18	1.03	3.261	.041	.042
Between 5 and 10 years	41	3.58	.856			
More than 10 years	53	3.64	1.15			
Training & Education						
Less than 5 years	59	1.73	.566	4.207	.017	.053
Between 5 and 10 years	41	1.87	.576			
More than 10 years	53	2.08	.739			
Materials & equipment						

Less than 5 years	59	2.97	1.13	1.132	.325	.015
Between 5 and 10 years	41	3.02	1.06			
More than 10 years	53	3.27	1.07			

When analyzing the results of the One-way Anova, we also found statistically significant differences regarding the Length of Professional Experience in the Emergency Service in the Assessment & Feedback subscales (F (2, 150) = 4.359, p = .014), Training & Training (F (2, 150) = 5.134, p = .007), Leadership & Formal Alerts (F (2, 150) = 5.063, p = .007), as well as the total value of the scale (F (2 , 150) = 6.706, p = .002). These differences were found between professionals with more than 10 years of professional experience in the emergency room and professionals with less than 5 years of professional experience in the emergency room (Table 12).

Table 12 Difference between averages depending on the number of years of professional experience in the ed.

	N	M	SD	F	p	η2
Full scale						
Less than 5 years	77	2.82	.628	6.706	.002	.082
Between 5 and 10 years	34	3.14	.617			
More than 10 years	42	3.28	.844			
Evaluation & feedback						
Less than 5 years	77	3.54	1.11	4.359	.014	.055
Between 5 and 10 years	34	4.01	.873			
More than 10 years	42	4.10	1.20			
Organisational climate						
Less than 5 years	77	2.35	1.17	1.877	.157	.024
Entre 5 e 10 years	34	2.35	1.30			
Mais de 10 years	42	2.79	1.33			
Leadership & formal alerts						
Less than 5 years	77	3.19	.962	5.063	.007	.063
Between 5 and 10 years	34	3.66	.851			
More than 10 years	42	3.75	1.23			
Training & Education						
Less than 5 years	77	1.73	.558	5.134	.007	.064
Between 5 and 10 years	34	1.99	.562			
More than 10 years	42	2.10	.789			
Materials & equipment						
Less than 5 years	77	2.95	1.10	1.353	.262	.018
Between 5 and 10 years	34	3.22	1.08			
More than 10 years	42	3.25	1.11			

Finally, and regarding Hand Hygiene Training, the results showed the existence of statistically significant differences in the Assessment & Feedback (t(151) = -2.994, p =.003), Training & Training (t(151) = -3.579, p =.000), Leadership & Formal Alerts (t(151) = -2.691, p =.008), as well as on the total scale (t(151) = -2.504, p =.013). It was possible to verify that the higher average values in the total scale and in the dimensions with statistical significance concerned participants who did not attend HH training (Table 13).

Table 13 Differences between averages as a function of hand hygiene training

	N	M	SD	t	p	d
Full scale						

Yes	112	2.93	.735	-2.504	.013	.71
No	41	3.27	.615			
Evaluation & feedback						
Yes	112	3.64	1.13	-2.994	.003	1.08
No	41	4.23	.945			
Organisational climate						
Yes	112	2.47	1.29	.085	.932	1.26
No	41	2.45	1.17			
Formal alerts						
Yes	112	3.31	1.03	-2.691	.008	1.03
No	41	3.82	1.00			
Training & Education						
Yes	112	1.78	.639	-3.579	.000	.623
No	41	2.19	.579			
Materials & equipment						
Yes	112	3.12	1.11	.612	.541	1.10
No	41	3.00	1.08			

Discussion

When developing the present study guided by the objective of analyzing the perception of health professionals in an emergency service regarding barriers to good HH practices, we can verify that the barriers included in the Assessment & Feedback subscale are the most perceived, which, refer to access to information by health professionals regarding the results of the HH assessment.

Several studies indicate the importance of periodically issuing reports with the results of evaluations on the practice of HH, thus meeting the WHO guidelines, which, using one of the five components of the multimodal strategy, reiterates the encouragement and the importance of communicating the results of infection rates associated with healthcare, as well as their periodic surveillance, making it possible to monitor the performance of healthcare institutions in this area (World Health Organization, 2021).

Corroborating this guidance, Seo et al. (2019) highlight the importance of monitoring and providing feedback on compliance with HH practice, thus constituting a self-reflective attitude that promotes behavior change. In the study developed by Kim et al. (2023), they found the need for monitoring and feedback on HH compliance, emphasizing that this feedback improves compliance. Also, Lien et al. (2018), found that participants in their study had poor knowledge about infection control practices in their hospital, recognizing that making data on HAIs available to healthcare professionals is a viable intervention for improving infection control practices.

Considering also that as the nurse is the 'Liaison' with the institution's Infection Control Committee, and the main person responsible for supervision and training in this domain, they should assume greater visibility, developing closer work with other healthcare professionals.

In our study, the Organizational Climate subscale presents the most perceived items as those related to having a lot of things to do and being too busy with other things. Patient overload is cited as an obstacle to HH (Lien et al., 2018). Likewise, increased workload interferes with adherence to HH (Kim et al., 2023). According to Chang and colleagues (2022), adequate hand hygiene requires time, which is limited as the workload increases. They also found that compliance with HH associated with isolation precautions decreased with the increase in workload. The barriers included in the Leadership & Formal Alerts subscale refer to the role of management and leadership bodies in promoting HH, allowing the perception of health professionals to be

assessed regarding the existence of incentives and sanctions due to compliance with good HH practices, as well as the existence of promotional material. In this matter, Burnett (2018) highlights that in a healthcare institution, leadership is decisive in promoting, increasing and auditing effective infection prevention and control measures. Shim et al., (2019), also highlight that compliance with HH by professionals is significantly associated with compliance by their leaders, thus reinforcing that leadership plays a crucial role in compliance with HH. Corroborating this idea, Trannin et al. (2016) highlight that promoting HH deserves greater attention and should be strengthened, contributing to an adequate perception of health professionals on the topic. In our study, regarding promotional material, this item was highly rated, suggesting the existence of little promotional material about HH. In this regard, Issa and collaborators (2023) and Lien and collaborators (2018) consider that the use of strategies such as pamphlets, pens and reminders should be used to improve adherence to HH.

Our results clearly show the lack of reward policies to encourage behavioral change, as well as sanction measures for non-compliance with best practice recommendations. To encourage change, the World Health Organizations (2009) stress that sanctions are necessary and show results over time. In this regard, Yadav (2019) states that a policy that includes recognition for changes in behavior, using rewards, is decisive for developing personal motivation. This strategy is also emphasised by Issa et al. (2023).

The fact that Qualification & Training is the least perceived barrier leads us to believe that health professionals value continuing education processes, seeking professional improvement. Also, the fact that this study was developed in the context of the COVID-19 pandemic, in which there was a high training investment on the part of institutions with regard to guidelines on infection control, may have certainly contributed to the objective results.

In the health institution where this study was developed, the Local Coordinating Group of the Infection Prevention and Control and Antimicrobial Resistance Program years (2020) corroborates what was previously mentioned, in that there was an increase of 18, 5% in training in basic infection control practices, compared to 2019, which is 6.7% higher than the national training rate.

Several studies highlight the importance of training and education in adherence to HM. In the research developed by Kim et al. (2023), the assessment of adherence to HH compliance was lower in the “doctors” group compared to other professionals, as they reported not having HH training. BaeK and collaborators (2020) also found that after implementing multiple training and education activities, the HH compliance rate was higher. Issa et al. (2023), state that the most effective interventions for HH for healthcare professionals are education and training, whether alone or complemented by posters, feedback, presentations, live demonstrations, simulations or video monitoring. The lack of an alcohol-based antiseptic solution (SABA) with automatic dispenser and moisturizing hand cream, as well as the availability of enough washbasins/soap were the highest points in the Materials & Equipment subscale. These data are corroborated with the study developed by Lien and collaborators (2018), with the aim of exploring professionals' perceptions about the control of hospital infections, in which participants stated that they did not have a sufficient number of washbasins, soap and antiseptic for HH. Likewise, Issa et al. (2023) and Kim et al. (2023) recognize the importance of these in adherence to HM. Skin problems associated with HM products were mentioned in the research developed by Kim and collaborators (2023), reinforcing the need for a moisturizing cream to protect the skin.

We found that there was no correlation between gender and perception of barriers to good HH practices. Searching for scientific knowledge, we found that it is not clear, only mentioning that males have a lower rate of compliance with HM (Pisoeiro & Gaspar, 2014).

The age group between 20-30 years and the group over 41 years perceive barriers more, compared to healthcare professionals aged between 31-40 years. Given the scarcity of studies that explain this correlation,

we raise some explanatory hypotheses that, however, require confirmation. Eventually, older healthcare professionals have a more in-depth knowledge of reality, and therefore tend to be more critical. On the other hand, younger participants perceive more barriers due to their recent academic training, in which aspects related to infection control deserve greater emphasis in the curriculum.

We found that the higher the academic level, the greater the perception of barriers to good HH practices. Given the lack of scientific evidence supporting this correlation, we support its analysis in the development of critical thinking regarding the surrounding reality, as a transversal skill. In this field, Saiz (2020) highlights the preponderant role of university institutions, due to their contribution to the development of critical and reflective sense.

In relation to the professional category, as we saw previously, operational assistants are the professional group that perceives the barriers least, followed by nurses and finally doctors, the professionals who perceive the barriers to adherence to HH the most. The literature points out that there are no differences in the perception of barriers depending on the professional group. On the other hand, she highlights that, when audits are carried out, doctors show a lower adherence rate to HH compared to other professional groups. One explanation seems to be related to personal judgment and some distrust regarding good practice guidelines in infection control (Le et al., 2019).

Regarding professional experience, whether total or in the emergency service, we found that the least experienced and most experienced participants are those who perceive the barriers the most. Some authors emphasize that less experienced professionals have greater awareness of obstacles, while more experienced health professionals are characterized by a more improved critical sense over the years of professional practice (Costa & Gaspar, 2017).

More recent academic training among recently graduated professionals could explain that less experienced participants will be more aware of the importance of basic infection control measures. We also know that the COVID-19 pandemic forced health institutions to hire more health professionals, most of whom are young and consequently with less professional experience, coming from other institutions, which allows them to experience different realities, being relevant in the perception of a greater number of barriers to HH, by comparison between professional practice contexts.

Finally, having or not having training in HH did not influence the perception of barriers to good HH practices. These results would eventually be expected for health professionals who underwent training in HH, on the other hand, for participants who did not receive training, with the average values also being low, they can be interpreted as the devaluation of training in infection control.

Some authors highlight individual factors as determinants for compliance with infection control measures, such as: perception and awareness of risk, individual values and beliefs, knowledge about the topic and perception of the effectiveness of the measures instituted (Cunha et al., 2017).

Analyzing the practice of HH, we can be led to believe that we are faced with an apparently simple technique, which could explain the lack of sensitivity of health professionals towards training, justifying this position on individual factors. Doctorate et al. (2017) emphasize that changes in behavior are not directly or exclusively related to training processes, highlighting the incorporation of this knowledge into the practice of health professionals as a determining factor.

Conclusion

International guidelines emphasize MH as one of the main strategies in infection prevention and control, regardless of the care setting, highlighting the importance of measures that sustain adherence to this

practice by healthcare professionals over time. To this end, the literature emphasizes that studies should be carried out in each context of professional practice, allowing us to get to know the reality, highlighting that some specificities can negatively affect the results.

Aspects arising from the management policies of healthcare units, as well as healthcare professionals' knowledge of the results of internal and periodic audits of each service, are particularly important for the development of continuous improvement processes. Moments of dialogue between healthcare professionals and leaders should be promoted and valued, as they are crucial for identifying difficulties in relation to MH practice, allowing objectives and strategies to be outlined with a view to achieving better results.

Although training was predominant in this study, it was not a barrier, which leads us to believe that training is adequate in the emergency department and in the institution. We believe that the effect caused by the COVID-19 pandemic has influenced the perception of health professionals on this issue, as a result of a high investment in training. This study also allows us to deepen our knowledge of this subject in the context of the emergency department, where the perception of barriers to MH has been little studied. It is important to emphasize that knowledge of the specific constraints of each context of clinical practice makes it possible to define strategies to promote patient safety, based on scientific evidence.

As a limitation in carrying out this study, we point out the lack of research on this topic, especially in Portugal and in the context of emergency services, namely the perception that health professionals present regarding the conditions for HM compliance, highlighting that most Research works focus their attention on adherence to good HH practices. We suggest that a more in-depth study of this topic should be guided with the aim of understanding the relationship between the perception of health professionals on this topic and adherence to good HH practices.

Declaration of conflict of interest

To the Scientific Editor of the Journal of Research & Innovation in Health,

The authors of the present manuscript, entitled "BARRIERS TO HAND HYGIENE IN AN EMERGENCY SERVICE ACCORDING TO HEALTH PROFESSIONALS", declare that they do not have any financial, commercial, political, academic or personal conflict of interest, as well as the content This work results from a Master's Dissertation, carried out at the Nursing School of the University of Minho.

Bibliographic References

Administração Central do Sistema de Saúde. (2021). *Produção e Rácios de Eficiência*. https://benchmarking-acss.min-saude.pt/MH_ProdRacioEficUrgenciaDashboard

Baek, E. H., Kim, S. E., Kim, D. H., Cho, O. H., Hong, S. I., & Kim, S. (2020). The difference in hand hygiene compliance rate between unit-based observers and trained observers for World Health Organization checklist and optimal hand hygiene. International journal of infectious diseases: IJID: official publication of the International Society for Infectious Diseases, 90, 197–200. https://doi.org/10.1016/j.ijid.2019.10.004

Belela-Anacleto, A. S., Peterlini, M. A., & Pedreira, M. D. (2017). Hand hygiene as a caring practice: a reflection on professional responsibility. Revista Brasileira de Enfermagem, 70(2), 442-445. https://doi.org/10.1590/0034-7167-2016-0189

Burnett, E. (2018). Effective infection prevention and control: the nurse's role. Nursing Standard, 33(4), 68-72. https://doi.org/10.7748/ns.2018.e11171

Chang, N. N., Schweizer, M. L., Reisinger, H. S., Jones, M., Chrischilles, E., Chorazy, M., Huskins, W. C., & Herwaldt, L. (2022). The impact of workload on hand hygiene compliance: Is 100% compliance achievable? Infection control and hospital epidemiology, 43(9), 1259–1261. https://doi.org/10.1017/ice.2021.179

Costa, A., & Gaspar, P. (2017). Perfil de competências do enfermeiro no serviço de urgência. In M. Dixe, P. Sousa & P. Gaspar (Eds.), Construindo conhecimento em enfermagem à pessoa em situação crítica (1ª ed., pp. 49-67). Instituto Politécnico de Leiria. https://iconline.ipleiria.pt/bitstream/10400.8/2877/1/PSC_Ebook.pdf

Cunha, Q., Camponogara, S., Freitas, E., Pinno, C., Dias, G., & Cesar, M. (2017). Fatores que interferem na adesão às precauções padrão por profissionais da saúde: Revisão integrativa. Enfermagem em Foco, 8(72). https://doi.org/10.21675/2357-707X.2017.v8.n1.980

Direção-Geral da Saúde. (2017). Programa de Prevenção e Controlo de Infeções e de resistência aos antimicrobianos. https://www.sns.gov.pt/wp-content/uploads/2017/12/DGS_PCIRA_V8.pdf

Doutorado, C., Barros, D., Vasconcelos, R., & Santos, A. (2017). Survey on knowledge, attitude and hygiene practice of hands by nursing professionals. Revista de Enfermagem UFPE, 11, 1136-1145. https://dx.doi.org/10.5205/reuol.10544-93905-1-RV.1103201703

Graveto, J. M., Rebola, R. I., Fernandes, E. A., & Costa, P. J. (2018). Hand hygiene: nurses adherence after training. Revista Brasileira de Enfermagem, 71, 1189-1193. https://doi.org/10.1590/0034-7167-2017-0239

Grupo Coordenador Local – Programa de Prevenção e Controlo de Infeções e de Resistência aos Antimicrobianos. (2020). Relatório de Atividades. Centro Hospitalar do Tâmega e Sousa. EPE. GCL-PPCIRA

Issa, M., Dunne, S. S., & Dunne, C. P. (2023). Hand hygiene practices for prevention of health care-associated infections associated with admitted infectious patients in the emergency department: a systematic review. Irish journal of medical science, 192(2), 871–899. https://doi.org/10.1007/s11845-022-03004-y

Kim, J., Yu, S.N., Jeong, Y.S. Yu, S.N., Kim, J.H., Jeon, M.H., Kim, T., & Choo, E. J. (2023). Hand hygiene knowledge, attitude, barriers and improvement measures among healthcare workers in the Republic of Korea: a cross-sectional survey exploring interprofessional differences. Antimicrob Resist Infect Control, 12(1), 93. https://doi.org/10.1186/s13756-023-01296-y

Le, C., Lehman, E., Nguyen, T., & Craig, T. (2019). Hand Hygiene Compliance Study at a Large Central Hospital in Vietnam. International Journal of Environmental Research and Public Health, 16(4). https://doi.org/10.3390/ijerph16040607

Lien, T. Q., Johansson, E., Lan, P. T., Chuc, N. T. K., Thoa, N. T. M., Hoa, N. Q., Phuc, H. D., Tamhankar, A. J., & Lundborg, C. S. (2018). A Potential Way to Decrease the Know-Do Gap in Hospital Infection Control in Vietnam: "Providing Specific Figures on Healthcare-Associated Infections to the Hospital Staff Can 'Wake Them Up' to Change Their Behaviour". International journal of environmental research and public health, 15(7), 1549. https://doi.org/10.3390/ijerph15071549

Maroco, J. (2003). Análise Estatística com utilização do SPSS. Edições Sílabo

Oliveira, M., Menezes, L., Filho, J., Leite, M., Fernandes, L., Santos, A., Correia, K. (2019). Hand hygiene: knowledge and attitudes of healthcare professionals. Revista de Enfermagem UFPE, 13, 33-37. https://doi.org/10.5205/1981-8963.2019.236418

Pestana, M. H., & Gageiro, J. N. (2003). Análise de dados para ciências sociais: A complementaridade do SPSS. (3ªed.). Edições Sílabo.

Pisoeiro, Z., & Gaspar, P. (2014). Hand hygiene compliance. Barriers perceived by healthcare professionals. In P. Sousa, F. Serranheira & A. S. Uva (Eds.), Livro de proceedings do 4º Congresso Internacional de Qualidade em Saúde e Segurança do Doente (1ª ed., pp. 201-210). Congresso Internacional de Qualidade em Saúde e Segurança do Doente. https://www.researchgate.net/publication/262663695_Hand_hygiene_compliance_Barriers_perceived_by_healthcare_professionals

Puro, V., Coppola, N., Frasca, A. et al. (2022). Pillars for prevention and control of healthcare-associated infections: an Italian expert opinion statement. Antimicrobial Resistance & Infection Control, 11, 87. https://doi.org/10.1186/s13756-022-01125-8

Saiz, C. (2020). Pensamiento Critico y Eficácia. (2ª ed.). Pirámide.

Seo, H. J., Sohng, K. Y., Chang, S. O., Chaung, S. K., Won, J. S., & Choi, M. J. (2019). Interventions to improve hand hygiene compliance in emergency departments: a systematic review. Journal of Hospital Infection, 102(4), 394-406. https://doi.org/10.1016/j.jhin.2019.03.013

Shim, J. Y., Park, S., Kim, G. E., Jeong, Y. S., Kim, J. H., Lee, E., Lee, E. J., Kim, T. H., & Park, S. Y. (2019). Does Physician Leadership Influence Followers' Hand Hygiene Compliance? Open forum infectious diseases, 6(6), ofz236. https://doi.org/10.1093/ofid/ofz236

Silva, J. K., Matos, E., & Souza, S.S. (2020). Care bundle for both prevention and control of hospital-acquired infection in adult emergency service. Revista de Pesquisa Cuidado é Fundamental Online, 12, 176–182. https://doi.org/10.9789/2175-5361.rpcfo.v12.7192

Thandar, M. M., Rahman, M. O., Haruyama, R., Matsuoka, S., Okawa, S., Moriyama, J., Yokobori, Y., Matsubara, C., Nagai, M., Ota, E., & Baba, T. (2022). Effectiveness of Infection Control Teams in Reducing Healthcare-Associated Infections: A Systematic Review and Meta-Analysis. International journal of environmental research and public health, 19(24), 17075. https://doi.org/10.3390/ijerph192417075

Trannin, K., Vancini-Campanharo, C., Lopes, M., Okuno, M., & Batista, R. (2016). Adesão à higiene das mãos: intervenção e avaliação. Cogitare Enfermagem, 21. https://doi.org/10.5380/ce.v21i2.442466

World Health Organization. (2009). Guidelines on Hand Hygiene in Health Care. First Global Patient Safety Challenge Clean Care is Safer Care. WHO. http://apps.who.int/iris/bitstream/handle/10665/44102/9789241597906_eng.pdf?sequence=1

World Health Organization. (2011). Report on the Burden of Endemic Health Care-Associated Infection Worldwide. WHO. https://iris.who.int/bitstream/handle/10665/80135/9789241501507_eng.pdf

World Health Organization. (2021). Draft Global Patient Safety Action Plan 2021-2030. WHO.https://www.who.int/teams/integrated-health-services/patient-safety/policy/global-patient-safety-action-plan

Yadav, S. K., Semwal, R. S., Piyush, A., & Nath, B. (2019). Knowledge, attitude and perceived barriers of doctors towards hand hygiene in a govt. tertiary care hospital. Journal of Preventive Medicine and Holistic Health, 5(2), 91–98.https://doi.org/10.18231/j.jpmhh.2019.018