



ORIGINALES

Monitoring hand hygiene: direct observation versus self-report rates

Monitorização da higienização das mãos: observação direta versus taxa autorreportada

Control de la higiene de manos: observación directa versus tasa autorreportada

Adriana Cristina Oliveira¹

Adriana Oliveira de Paula²

Camila Sarmiento Gama³

¹ Nurse. Postdoctoral researcher from the University of New York. Associate Professor in the Basic Nursing Department of the Nursing School of the Federal University of Minas Gerais (UFMG). CNPq Researcher (1D). Brazil.

² Nurse. Doctor of Nursing from the Graduate Program of the Nursing School of the Federal University of Minas Gerais (UFMG). Technical advisor for company GJO Comércio e Representações LTDA. Brazil.

³ Nurse. Doctoral Nursing Student in the Graduate Program of the Nursing School of the Federal University of Minas Gerais (UFMG). Brazil.

E-mail: adrianaoliveira@gmail.com

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ABSTRACT:

Hand hygiene is one of the main measure to control infections. This study **aimed** to compare hand hygiene adherence rates in an intensive care unit obtained through direct observation and self-reported compliance. This cross-sectional study was conducted in a university hospital between September and December of 2013. Data were collected through direct observation of healthcare workers from medical and nursing staff and the application of a structured questionnaire to identify self-reported compliance rates. Descriptive and univariate analysis were performed. A total of 1,935 opportunities for practicing hand hygiene was obtained. The self-reported hand hygiene adherence rate was 87.9% and observed adherence was 19.0% ($p < 0.001$). Simple hand hygiene was reported as preferred by 70.2% of healthcare workers, followed by 12.3% for hand rubbing with alcohol and 17.5% for both (simple hand hygiene followed by hand rubbing with alcohol), such rates being similar for self-reported and observed rates. The self-reported hand hygiene rates were overestimated and the rates obtained through direct observation were low, although not distinct from the world scenario, reaffirming the need to implement continuous strategies to improve these.

Keywords: Hand Hygiene; Cross Infection; Health Personnel; Patient Safety

RESUMO:

A higienização das mãos (HM) constitui uma das principais medidas de controle das infecções. **Objetivou-se** comparar as taxas de adesão à HM obtidas por métodos de observação direta e taxa autorreportada em uma unidade de terapia intensiva. Tratou-se de um estudo transversal, realizado em

um hospital universitário entre setembro e dezembro de 2013. Os dados foram coletados por meio da observação direta dos médicos e equipe de enfermagem e aplicação de um questionário estruturado para identificar a taxa de adesão autorreportada e sua percepção sobre tal procedimento. Foram realizadas análises descritiva e univariada. Foram acompanhadas 1.935 oportunidades para HM. A taxa de adesão autorreportada foi de 87,9% e a taxa observada 19,0% ($p < 0,001$). A HM simples foi referida como preferida por 70,2% dos profissionais de saúde, seguido de 12,3% para fricção antisséptica e 17,5% para ambas (HM simples seguida de fricção antisséptica), sendo tais taxas semelhantes para a taxa autorreportada e observação direta. As taxas de adesão à HM autorreportadas foram superestimadas e as taxas obtidas pela observação direta foram baixas, embora não distintas do panorama mundial, reafirmando a necessidade de implementação de estratégias contínuas para melhoria destas.

Palavras-chave: Higiene das Mãos; Infecção Hospitalar; Pessoal de Saúde; Segurança do Paciente

RESUMEN:

La higiene de las manos es una de las principales medidas de control de las infecciones. Este estudio tuvo como **objetivo** comparar las tasas de adherencia a la higiene de las manos obtenidos por métodos de observación directa y la tasa autorreportada en una unidad de cuidados intensivos. Estudio transversal realizado en un hospital universitario, entre septiembre y diciembre de 2013. Los datos fueron recolectados a través de la observación directa del personal médico y de enfermería, y la aplicación de un cuestionario estructurado para identificación de las tasas de adhesión autorreportadas. Se realizaron análisis descriptivos y univariantes. El proyecto fue aprobado por el Comité de Ética. Se obtuvo un total de 1935 oportunidades para la higiene de las manos. La tasa de adhesión autorreportada fue de 87,9%, mientras que la tasa observada fue del 19,0% ($p < 0,001$). La higiene de las manos simples fue referido como preferido por 70,2% de los profesionales de la salud, seguido de 12,3% de fricción con solución alcohólica antiséptica y 17,5% por ambos (higiene de las manos simple seguida de fricción con solución alcohólica antiséptica), y dichas tasas fueron similares en la adhesión autorreportadas y la observación directa. Las tasas de adhesión autorreportadas a la higiene de manos fueron sobreestimadas y las tasas obtenidas por observación directa fueron bajas, aunque no distinta de la escena mundial, reafirmando la necesidad de estrategias de implementación continua para la mejora de estas.

Palabras clave: Higiene de las Manos; Infección Hospitalaria; Personal de Salud; Seguridad del Paciente.

INTRODUCTION

Hand hygiene (HH) is acknowledged as one of the main actions to control Healthcare-associated Infections (HAI)⁽¹⁻²⁾, and is encouraged by national and international agencies in accordance with the World Health Organization (WHO)⁽³⁾.

In order to improve HH practice, WHO has proposed a strategy called *My Five Moments for Hand Hygiene*, summarizing the main hand hygiene opportunities for healthcare professionals during their care practice (before patient contact, before the clean and aseptic task, after body fluid exposure risk, after patient contact, and after contact with patient surroundings), for the purpose of protecting the patient, the professional, and the environment from the spread of microorganisms⁽¹⁾.

However, despite of its globally acknowledged importance, national and international studies are demonstrating that HH adherence rates are low and hardly ever exceed 50%⁽⁴⁻⁷⁾.

Besides increasing the HH adherence rate, one of the challenges has been to assess such adherence among healthcare professionals. In this regard, various methods have been proposed, of which, direct observation, self-administered questionnaires, and supply measurement are worth mentioning⁽⁸⁾.

Nonetheless, there is not in the literature any standard method to be used, since all known methods have their advantages and disadvantages^(1,8-10).

In view of the above, this study has aimed to compare the HH adherence rates obtained through direct observation and self-reported rate methods among healthcare professionals in an intensive care unit (ICU).

MATERIAL AND METHODS

This was a cross-sectional study, conducted in an adult ICU of a tertiary, public university hospital located in Belo Horizonte, Minas Gerais. The project was approved by the institution's Research Ethics Committee, under ETIC expert opinion No. 398796, subject to resolution No. 466/2012 for research on human beings.

The professionals in the medical and nursing team who were providing direct care to patients during the data collection period (September to December 2013) and who accepted to be a part of the study by signing the Informed Consent Form (ICF) were enrolled in the study.

Data collection was performed by two undergraduate research students, who had been previously trained on the key notions of hand hygiene and questionnaire administration and direct observation techniques. The training consisted in reading manuals, "*Manual for Observers: WHO multimodal hand hygiene improvement strategy*"⁽¹¹⁾, "*Guide to Implementation: A Guide to the implementation of the WHO multimodal hand hygiene improvement strategy*"⁽³⁾ and "*Patient safety. Hand Hygiene*",⁽¹²⁾ in addition to discussions and clarification on doubts.

Later, for direct observation, field training was conducted, with the research team being authorized for collection only after they reached a level of agreement of at least 85% with the principal researcher.

A form was used containing the following variables: observer's name, date, weekday, department, shift, professional category, sex, and code of the observed professional (name initials in order to maintain the participant's identity confidential). Also in the form were the five moments indicated for HH practice, according to WHO ("Before patient contact", "Before aseptic tasks", "After body fluid exposure risk", "After patient contact", and "After contact with patient surroundings"), the type of HH performed (water and soap and/or antiseptic handrub), whether the professional had just taking off the gloves, or whether the patient was in contact isolation. Each professional was observed until they reached a number of at least twenty opportunities, twice, on different days.

In order to try to minimize the Hawthorne effect, the healthcare professionals were notified in the ICF that they would be observed, though they were not aware of who was to observe them and when it would happen.

To administer the questionnaires, a structured form, adapted from the WHO, containing questions on the professional's socio-demographic characteristics (sex, age, marital status), work-related information (professional category, time of education, service to the institution, and experience in this industry, working shift, type of employment bond), and HH-related information (training in the last year, availability of inputs, knowledge on the HAI rate in this industry, impact of HAI on the patient's

outcome, HH efficacy, HH priority set by the institution's management, actions that they would consider effective to increase the rates of HH adherence among healthcare professionals, rate of adherence by the work team, self-reported rate, and the most frequently performed type of HH).

The questionnaires were individually administered, filled out by the interviewer during the healthcare professional's working hours. The researcher administering the questionnaires was not part of the field direct observation phase.

The adherence rate in this method was calculated by dividing HH frequency by the number of HH opportunities observed⁽¹⁾.

The data were tabulated and analyzed in the statistical application called *Statistical Package for Social Sciences* (SPSS), version 19.0. A descriptive analysis was conducted by using absolute values and percentages for categorical and mean variables, minimum and maximum values and standard deviation for numerical variables. For a univariate analysis, the quantitative variables were categorized according to the average, and a student's t-test was used for dependent samples. A 95% confidence interval was used with a significance ratio at 0.05.

RESULTS

Out of all 87 employees working in the adult ICU in the data collection period, six refused to participate in the study, 22 were not present on the days of collection (vacation, days off, dismissal, or on leave), and two were excluded because they knew the goals of the work. Thus, 57 professionals participated in the study, at an average age of 39.5 years and standard deviation of 7.2 years, average education time in years was 13.4 and standard deviation of 6.6. As to the time of service to the institution in years, the average was 9.3 and the standard deviation was 7.2, and the average time of service in the unit was 7.1 years with a 5.7 standard deviation. All these professionals were observed for HH in a total of 1,935 HH opportunities. The variables regarding socio-demographic characteristics are shown in Table 1.

Table 1 – Socio-demographic characteristics of healthcare professionals (n=57). Belo Horizonte, MG, Brazil, 2013.

Variable	n	%
Sex		
Female	42	73.7
Male	15	26.3
Professional category		
Nurse	8	14.0
Doctor	4	7.0
Nursing technician	45	79.0
Shift		
Morning	14	24.6
Afternoon	15	26.3
Night	28	49.2

Employment Bond		
Civil Service Career	34	59.6
Hired	23	40.4

With regard to HH, 49.1% (28) of the professionals reported that they received some training on this topic last year, all of them asserted that there is an alcoholic solution available in the unit, 91.2% informed that HAI's have a high or very high impact on the patient's clinical evolution, and 96.5% reported that HH is effective or very effective to reduce HAI.

Most professionals (63.2%) considered that huge or moderate effort was required to perform HH.

The self-reported HH adherence rate was 87.9% (minimum value of 50%, maximum value of 100%, 11.8 standard deviation), while the observed rate was 19.0%. A statistic difference was found between the self-reported and observed adherence rate averages ($p < 0.001$).

With regard to socio-demographic characteristics, no statistical difference was found ($p > 0.05$) between the self-reported and observed adherence averages for the variables: sex, training received last year, shift, and necessary effort for HH. Nonetheless, some difference was found for professional category, employment bond, age, time of education, service to the institution, and in the unit (Table 2).

Table 2 – Univariate analysis of explanatory variables, with regard to self-reported and observed rates. Belo Horizonte, MG, Brazil, 2013.

Variable	Self-reported rate	p	Observed rate	p
	(%)		(%)	
Professional category				
Doctor	72.5	-	38.4	-
Nurse	89.8	0.004	25.1	0.485
Nursing technician	88.4	0.013	16.1	0.006
Employment Bond				
Civil Service Career	86.3	-	14.1	-
Hired	89.2	0.326	26.2	0.008
Age				
<40 years old	86.6		24.6	
≥ 40 years old	88.1	0.644	11.1	0.001
Time of education				
< 14 years	87.4		24.2	
≥ 14 years	87.4	0.954	12.2	0.004
Time of service to the institution				
< 9 years	87.1		23.7	
≥ 9 years	87.9	0.821	13.3	0.022

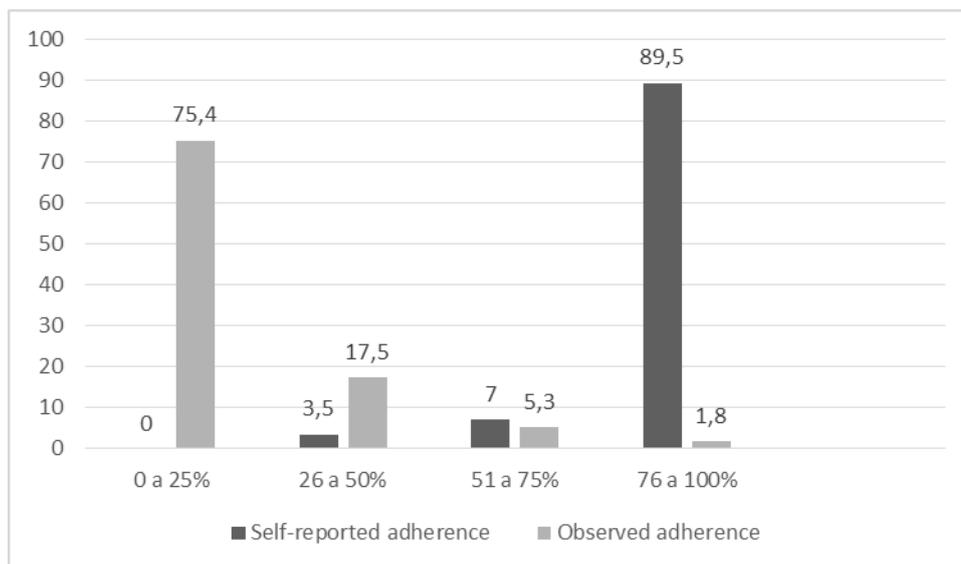
Time of service in the unit

< 7 years	88.3		23.9	
≥ 7 years	87.7	0.849	9.2	0.000

* Continuous variables have been categorized according to average for this analysis.

Graph 1 shows a comparison between self-reported and observed adherence rates, categorized according to quartiles (n=57).

Graph 1 – Distribution of healthcare professionals according to self-reported and observed adherence rates categorized according to quartiles. Belo Horizonte, MG, Brazil, 2013.

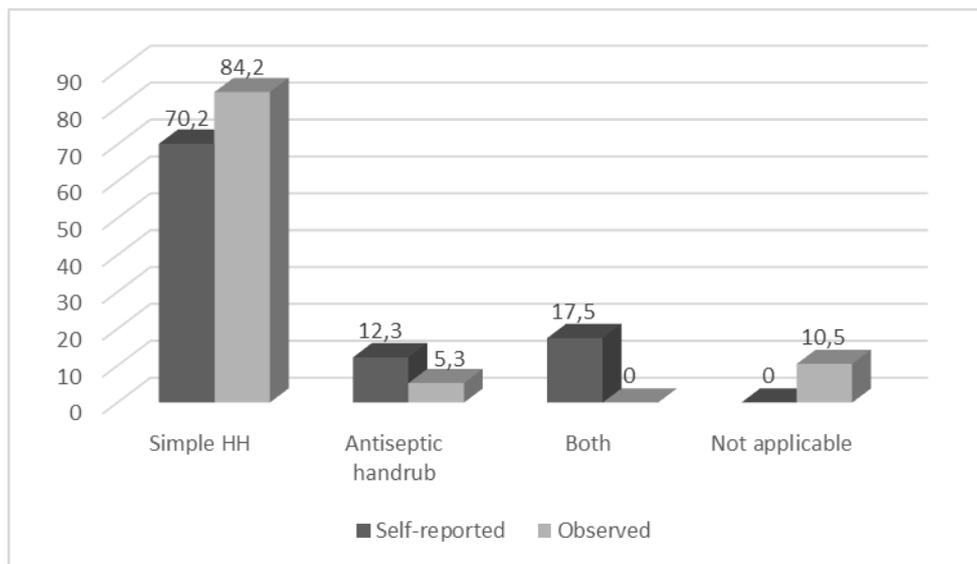


According to Graph 1, it has been observed that most professionals (75.4%) had their observed adherence rates between 0 and 25%, while for self-reported adherence rates the professionals concentrated in the 76 to 100% answers (89.5%).

Simple HH was performed by 70.2% of employees. Only 12.3% said that they do the antiseptic handrub more often, and 17.5% of the professionals reported that they do both (simple HH, followed by the antiseptic handrub) at all times.

Preference for simple HH by the professionals in this study was confirmed by the results of the observations. However, no professional performed both procedures (simple HH and antiseptic handrub) during the data collection period, as they had informed when the questionnaire was being administered. For 10.5% of the professionals, the adherence rate was 0%, as no technique was seen performed (Graph 2).

Graph 2 – Distribution of professionals according to the type of HH that they perform most frequently (self-reported and observed). Belo Horizonte, MG, Brazil, 2013.



In view of the results, higher similarity between the self-reported and observed data has been verified with regard to the type of HH (simple HH or antiseptic handrub). On the other hand, for HH adherence rates, a higher discrepancy has been found between the self-reported (87.9%) and the observed (19.0%) information.

DISCUSSION

Based on the results of this study, it has been found that the professionals overestimate their HH adherence rates, as the self-reported rate (87.9%) was quite different from the observed rate (19.0%), similarly to the findings of other studies⁽¹³⁻¹⁴⁾. The use of the questionnaire in the face-to-face interview may lead to this behavior of overestimating opinions and conduct and generating socially accepted answers. Thus, when this method is used, the healthcare professional will almost always tend to report higher rates than what they actually do⁽¹⁵⁻¹⁶⁾.

Another possible explanation is that not always do they recognize all HH opportunities, and believe that they have great performance⁽¹⁷⁾, whether due to the amount of times that they clean their hands during a work shift, regarding this frequency as proper, or due to their level of information with respect to the recognition of HH opportunities, often indicated by unnecessary contact with a patient and the surfaces surrounding them. This fact comes from the lack of familiarity with the hand hygiene guides that address the indications^(1,18).

From this perspective of low knowledge level, it has been found that less than 50% of the professionals reported that they received training on HH last year, which can confirm the initial premise, as training participation has been showing to be an efficient strategy as a method to improve HH widely known in international studies⁽¹⁹⁻²⁰⁾.

The training sessions, besides serving as some sort of reminder for professionals about the importance of HH, are key as methods for refreshers⁽¹⁹⁻²⁰⁾. The average time

of education of the professionals enrolled in this study was longer than 10 years, which many times lead to outdated technical and scientific knowledge. Taking into account the increasing number of published scientific articles and manuals from national and international organizations on the topic of HH, there is a clear effort by the academic community to produce new knowledge and enhancements in this field. However, it is necessary that this knowledge be conveyed to professionals in the patient care baseline, in the form of training and refresher sessions.

Another aspect stressing the need to update the professionals concerns the fact that most of them have reported that they do the simple HH more often when compared to antiseptic handrub. As from the publication of the HH guideline in 2002 by CDC⁽²¹⁾, the encouragement of alcoholic handrub as a replacement for simple HH for situations where there was no visible dirt was regarded as a great advance, because it reduces the time spent by the healthcare professionals, alcohol is excellently effective, and the procedure is reduced from one third to half the time spent⁽¹⁾.

However, when the questionnaires were administered, although it was not a variable present in the instrument, it was observed that the professionals were not aware of the advantages of replacing water and soap with alcohol or did not agree with this practice. Such fact was confirmed during the observations, where it was found that the professionals showed to prefer simple HH to antiseptic handrub, as well as in the self-reported reference showing higher adherence to the use of water and soap, which reinforces the need for more frequent training, including as a behavior-changing tool.

CONCLUSION

From the results obtained in this study, it has been noticed that, through self-reported rates, there was an overestimate on the part of the professionals when compared to HH adherence rates, possibly due to the failure to recognize the actual opportunities for this action.

From the direct observation of HH adherence, it has been possible to verify the true behavior of the professionals on the various opportunities noticed during their healthcare assistance, which reveals a serious situation of low HH adherence that can strongly compromise the patient's safety with regard to the transmission of microorganisms likely to lead to HAI's.

Nonetheless, the self-reported adherence rate has been regarded as an imported tool because it has allowed better understanding the professionals' perception on their own HH adherence rate, indicating the distance between what is perceived and what is actually done.

Thus, it has been found that the observed rates of HH adherence were low, even though not different from the world scenario. On the other hand, they stress the need to implement continuous strategies to improve them, particularly training that focus on HH techniques, indications, recognition of opportunities for this procedure (five moments described by WHO), as well as the indicated solutions and their effectiveness, for the purpose of allowing the professionals to acquire such knowledge, helping them follow a safer behavior for themselves and the patient.

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