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Original article

ADHERENCE TO HAND HYGIENE: INTERVENTION AND ASSESSMENT

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ABSTRACT: Quantitative study aimed to observe adherence to hand hygiene by health professionals of an Emergency Care Service of a Teaching Hospital, in the state of São Paulo, and assess whether an educational intervention conducted between July 2012 and December 2013 had impact on this practice. During 120 hours of observation, 5,061 opportunities of hand hygiene were observed and recorded. The greatest number of opportunities was observed among nursing professionals (70.05%), because they are most numerous health professionals and usually perform care functions; these were followed by the medical team (17.82%) and physiotherapists (12.13%). After the educational activities adherence increased from 28.6% to 38.9%.In the post-intervention moment, all the professionals showed higher adherence to hand hygiene compared to the pre-intervention moment, and adherence was significantly higher after the use of aseptic procedures. It is concluded that hand hygiene compliance was less than expected and educational strategies favored adhesion.
DESCRIPTORS: Hand hygiene; Hospital infection; Health personnel.

ADESÃO À HIGIENE DAS MÃOS: INTERVENÇÃO E AVALIAÇÃO

RESUMO: Trata-se de pesquisa quantitativa, com os objetivos de observar a adesão à higiene das mãos por profissionais de saúde de um Serviço de Emergência de Hospital Universitário, no estado de São Paulo, e verificar se houve modificação na adesão após a realização de intervenção educativa, entre julho de 2012 e dezembro de 2013. Foram observadas e registradas 5061 oportunidades de higiene das mãos em 120 horas de observação. O maior número de oportunidades foi de profissionais de enfermagem (70,05%), por ser a maior força de trabalho e tender predominantemente à assistência; seguiram-se a equipe médica (17,82%) e fisioterapeutas (12,13%). Observou-se adesão de 28,6% para 38,9% após as ações educativas. Na fase pós-intervenção, todos os profissionais apresentaram maior adesão à higiene das mãos quando comparado ao período pré-intervenção e a adesão foi significativamente maior após a realização de procedimentos assépticos. Conclui-se que a higienização das mãos esteve aquém do esperado e que estratégias educativas favoreceram a adesão.
DESCRITORES: Higiene das mãos; Infecção hospitalar; Pessoal de saúde.

ADHESIÓN A LAHIGIENE DE LAS MANOS: INTERVENCIÓN Y EVALUACIÓN

RESUMEN: Esta es una investigación cuantitativa cuyas finalidades fueron observar la adhesióna la higiene de las manos por profesionales de salud de un Servicio de Emergencia de Hospital Universitario, en estado de São Paulo, así como verificar si hubo cambio en la adhesión después de la realización de intervención educativa, entre julio de 2012 y diciembre de 2013. Fueron observadas y registradas 5061 oportunidades de higiene de las manos en 120 horas de observación. El mayor número de oportunidades fue de profesionales de enfermería (70,05%), en razón de esta ser la mayor fuerza de trabajo y presentar predominancia de asistencia; siguiéndose el equipo médico (17,82%) y los fisioterapeutas (12,13%). Se observó adhesión de 28,6% para 38,9% después de acciones educativas. En la etapa depos intervención, todos los profesionales presentaron más adhesión a la higiene de las manos cuando comparado al periodo de preintervención, además de la adhesión ser mucho mayor después de la realización de procedimientos asépticos. Se concluye que la higienización de las manos estubo abajo de lo que se espera y que estrategias educativas favorecen la adhesión.
DESCRIPTORES: Higiene de las manos; Infección hospitalar; Personal de salud.

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INTRODUCTION

Health-care associated infection (HCAI) is one of the most significant patient safety issues worldwide, and hand washing (HW) remains the key measure for HCAI prevention [1].

Many pathogens are transmitted through the hands of health care workers. Thus, in order to provide safe contact, hand hygiene (HH) is recommended before and after contact with patients and their environment, being a considered an essential measure to prevent nosocomial infections [2].

Full adherence to this practice is considered difficult to implement, particularly in emergency care services of hospitals, due to many obstacles to proper hand hygiene reported by health professionals, such as lack of time, work process that requires agility and urgency, great demand and simultaneous care to many patients [1].

Adherence to HH in health care services is a very challenging task, because there is no consensus on a methodological standard to be adopted, Thus, different methods are used to assess compliance to hand hygiene, including direct observation. The ideal measurement of compliance is the ratio of the number of performed actions using correct technique to the number of opportunities. The World Health Organization identified these opportunities as occurring in five moments: before contact with patient; before an aseptic procedure, after risk of exposure to body fluids; after contact with patient and after contact with the patient's environment and objects at the site of the patient[3].

Infection control should be integrated with a culture of safety in the organization to achieve the highest HH compliance rate. This culture of safety concerns a work environment where both the management and workers are fully aware and comply with safety measures [4].

Some areas should be developed to increase adherence to HH among health workers such as professional education, with the implementation of actions that emphasize the organization's standards and motivation, supporting behavioral patterns among peers [3].

Therefore, hand hygiene should be set as a priority in health organizations and be continuously supported by the health service management. Infections threaten both the patients and health professionals, and may lead to legal actions in cases of negligence during health care that result in harm to the patient [5].

Infection control in health services, including HH practices, in addition to meeting legal and ethical requirements, contributes to improving the quality of patient care. The benefits of these practices are unquestionable: reduction of morbidity and mortality of patients and even reduction in the costs associated to the treatment of infection [5].

The prospect of further scientific studies and discoveries on the routine in the different health care units involving multidisciplinary teams may lead to changes in the current profile of professional adherence to HH and its implications for disease transmission [6].

Regarding emergency care services, in particular, infections are favored by the need for administration of urgent invasive procedures, the serious condition of the patient, the huge demand, and the behavior of emergency team professionals. Thus, simple measures such as HH may reduce the dissemination of pathogens, contributing to patient safety. The hands of health professionals can be colonized (reaching 39%), increasing the risk of infection in emergency patients[7].

In view of the aforementioned, the present study aimed to observe adherence to hand hygiene (HH) by health professionals of an Emergency Care Service of a Teaching Hospital of São Paulo and assess whether an educational intervention conducted changed the level of HH adherence.

METHOD

Quantitative explanatory study with quasi-experimental design conducted in the Emergency Care Service of a Teaching Hospital of São Paulo, from July 2012 to December 2013.

The study was approved by the Research Ethics Committee of UNIFESP in 2011 (CEP- 2067/11), without the need for signing the Free Informed Consent, since the research did not pose risks or caused discomfort, and ensured the anonymity of the participants.

The sample was composed by the opportunities of HH or else, the moments during health-care activities when hand hygiene was performed. An opportunity exists when at least one indication of hand washing occurs and is observe. However, multiple indications may come together to create a single opportunity [8].

Data collection was performed by direct observation of hand hygiene practice of medical, nursing and physiotherapy teams. This strategy has been considered by the World Health Organization as the "gold standard" for behavior monitoring. Through this technique, a trained observer monitors hand hygiene in the facility to assess compliance with the practice. However, one negative aspect of this methodology concerns the fact that aware that they were being observed, these professionals may have changed their behavior regarding hand hygiene[1].

In the quantitative observation of this study, HH was assessed only for the number of opportunities and rate of adherence to the practice, excluding aspects related to the quality of hand washing, time spent in the practice, use of different products, gloves or ornaments.

Convenience sampling was used in the study and anonymity was ensure in data collection. Most of the sample was composed by nurses because they are the most numerous health professionals (55%), followed by physicians (40%) and physiotherapists (5%).

Data collection occurred at two moments called pre and post intervention periods: the first period consisted of 60 hours of observation totaling 2,304 opportunities. Al the professionals of the Emergency Care Service who were not on a leave or vacation participated in the educational intervention.

The educational activities lasted a week, and involved four strategies that included presentation of the data collected on HH rates of health professionals and a film about HH. Also, posters of the Ministry of Health were distributed in the area, and placed in strategic sites. Each participant received a colorful brooch pin with the words "Wash your hands" as a reminder and to encourage the practice, as well as an alcohol gel pump bottle to stimulate adherence to hand hygiene.

One month later, the second moment began with further data collection in the post-intervention period of 60 hours of observation, totaling 2,757 opportunities.

In the two moments, the observation was performed three times a week, for approximately three hours in each period of the day (morning, afternoon, night), totaling 120 hours of observation and reaching 5,061 opportunities [9].

The instrument for data collection created by the researchers based on the Guideline for Hand Hygiene in Health-Care Settings was composed of the following variables that corresponded to the opportunities of HH: preparation of oral and intravenous medication, administration of medication, urinary catheterization, vital signs, diet administration, venipuncture, gastric suctioning/enteral aspiration, bathing, diaper changing, physical examination, before or after the procedure. The form was completed by the researcher based on direct observation, and anonymity regarding adherence or non-adherence to HH was ensured. A pilot test regarding the use of the form was performed during one week [10].

Data were stored in a spreadsheet of the software Excel version Microsoft Office Excel 2010. For descriptive data analysis, frequency and percentage were calculated. The categorical variables were compared to the independent variables of interest by chi-square test and analysis of variance (ANOVA), with two factors for the variable moment regarding intervention and groups. The level of significance used was $p< 0.05$.

RESULTS

In the periods before and after educational intervention, the study totaled 120 hours of observation, which included 5,061 opportunities for the professionals to perform HH. The greatest number of opportunities observed concerned nursing professionals (3545; 70.05%), followed by the medical team and the physiotherapists (902; 17.82% and 614; 12.13%).

The procedures that provided the highest number of opportunities were physical examination(804; 15.89%), checking of vital signs (672; 13.28%), venipuncture (572; 11.30%), preparation of intravenous medication (533;10.53%), preparation of oral medication (516;10.20%), administration of medication (466; 9.21%), diet administration (427; 8.44%), diaper changing (270; 5.33%), some procedures such as dressing, bathing, oxygen therapy, a, urinary catheterization, oral hygiene and gastric suctioning had a percentage that corresponded to less than 5% of the sample.

Throughout the study, the physiotherapists showed greater adherence to HH compared to the other professionals: nurses and physicians (p=0.0029), according to Table 1.

In the pre-intervention period, 2,304 (45.52%) opportunities and in the post-intervention period 2,757 (54.48%) opportunities were audited. In the post-intervention period, all the professionals (nurses, physicians and physiotherapists) showed higher adherence to HH compared to the pre-intervention period (p<0.0001) (Table2).

The number of opportunities of HH after the procedures was 2,572 (50.82%) and before the procedures it was 2,489 (49.18%). Greater adherence to HH was observed after the procedures (p<0.0001) (Table3).

Table 1 – Total distribution of the number and percentage of frequency of adherence to hand hygiene of the professional groups (n=5061). São Paulo-SP-Brazil, 2013

	Adherence				
	Yes		No		
	n	%	n	%	p-value*
Nursing	1,227	34.6	2,318	65.4	p=0.0029
Physicians	271	30	631	70	
Physiotherapists	235	38.3	379	61.7	
Total	1,733	34.2	3,328	65.8	

Level of significance of 5% (p-value < 0.05).

Table 2 – Distribution of frequency and percentage of adherence to hand hygiene before and after educational intervention (n=5061). São Paulo-SP-Brazil, 2013

	Adherence				
	Yes		No		p
	N	%	N	%	
Pre – intervention	660	28.6	1,644	71.4	p<0.0001
Post – intervention	1,073	38.9	1,684	61.1	
Total	1,733	34.2	3,328	65.8	

Table 3 – Distribution of frequency and percentage of adherence to hand hygiene before and after the procedure (n=5,061).São Paulo-SP-Brazil, 2013

	Adherence				
Moment of hand hygiene	Yes		No		p
	N	%	n	%	
Before the procedure	467	18.8	2,022	81.2	P<0.0001
After the procedure	1.266	49,2	1,306	50.8	
Total	1733	34,2	3,328	65.8	

There were 3,018 (59.63%) non-aseptic procedures and 2,043 (40.37%) aseptic procedures. There was a significantly higher adherence to HH in aseptic procedures (p=0.0007). (Table 4)

At the pre-intervention moment, the nursing team showed a higher percentage of adherence to HH, with significant difference from physiotherapists and physicians (p=0.0010). However, at the post-intervention period, physiotherapists showed the highest adherence to HH (p=0.0000) (Table5).

All subjects showed a considerable increase in adherence to HH after the intervention.

Table 4 – Distribution of frequency and percentage of adherence to hand hygiene regarding aseptic and non-aseptic procedures (n=5061). São Paulo-SP-Brazil, 2013

Procedure	Adherence				
	Yes		No		
	N	%	n	%	p-value
Non-aseptic	977	32.3	2,041	67.6	0.0007
Aseptic	756	37	1,287	63	
Total	1,733	34.2	3,328	65.76	

Table 5 – Distribution of frequency and percentage to adherence to hand hygiene in the pre and post-intervention periods (n= 5,061). São Paulo-SP-Brazil, 2013

Groups	Adherence to hand hygiene								
	Pre-intervention				Post-intervention				
	Yes		No		Yes		No		p
	N	%	N	%	n	%	N	%	
Nursing	506	31.2	1,117	68.8	721	37.5	1,201	62.5	0.0005
Physicians	87	21.9	311	78.1	184	36.5	320	63.5	<0.0001
Physiotherapists	67	23.7	216	76.3	168	80.8	163	49.2	<0.0001
Total	660	28.6	1,644	71.4	1,073	38.9	1,684	61.1	

DISCUSSION

Monitoring HH adherence reduces the transmission of pathogens, and, particularly, the incidence of infections related to health care. It is considered a simple and essential measure to reduce patient mortality [6].

In the present study, the highest number of opportunities observed for HH occurred for nursing professionals, followed by the medical team and physiotherapists. A similar finding was obtained in another study where 75.3% of the opportunities for HH were audited in the nursing team, because nurses are the most numerous health professionals in health services, due to the nature of their functions, most of them care-related functions [11].

The procedures that provided the highest number of opportunities for HH in this study were physical examination, checking of vital signs, venipuncture and preparation of intravenous medication, respectively. Such results differ from those of another study conducted in an Emergency Unit of a Teaching Hospital, where the most commonly performed procedures were checking vital signs (80.8%), venipunctures (76.6%) and oxygen therapy (40.4%)[12].

In the present study, physiotherapists showed higher adherence to HH, followed by nurses and physicians, contrasting with another study in which nurses showed higher adherence to the practice than nursing technicians and physicians in the pre-intervention period. However, only nursing

technicians showed a significant increase in post-intervention adherence to hand hygiene [13].

In the post-intervention period, the subjects of this study showed significantly higher adherence to HH compared to the pre-intervention period. A study conducted at an Intensive Care Unit in the northwest of Paraná also found a significant improvement in the overall rate of adherence to HH after the implementation of a strategy of promotion of the practice among nursing technicians, nurses and physicians [13].

A study involving 603 procedures of a teaching hospital of Universidade Federal de São Carlos found that in 238 procedures hand hygiene was exclusively performed after the procedures [14], corroborating our findings that adherence to hand hygiene is significantly higher after the procedures and in aseptic procedures.

In the period before the educational intervention, the percentages of adherence to HH of nurses were higher than those of physicians and physiotherapists. However, in the post-intervention period, physiotherapists showed higher adherence to HH, followed by nursing and medical professionals. A study conducted in a Medical and Surgical Unit of a hospital in Minas Gerais also showed change in the rate of adherence to HH depending on the health profession: nursing technicians and assistants showed the highest adherence to hand hygiene (73.9%), followed by physicians (13.1%), physiotherapists (8.7%) and nurses (4.3%)[15].

The procedure of HH is the most simple and essential measure for controlling infection. However, the data collected from health professionals showed that these are not complying with this recommended practice. Low adherence to HH is not directly associated to theoretical knowledge, but to the incorporation of this knowledge to the daily. The rate of adherence to the practice was found to increase during campaigns of HH promotion, but it usually decreases six months after the campaign, reflecting a problem not only structural, but also related to awareness and ethical issues[16].

Urgent and emergency care services have peculiarities and specificities that have been studies all over the world, with special focus on issues related to increase demand, infrastructure problems, organization of services, quality of care and quantity and specificity of the care delivered[17].

Continuing assessment of compliance to HH in hospital services is essential and should be permanently conducted to ensure that the interventions have the desired impact, in addition to identify the areas and professionals that need improvement [16].

CONCLUSION

In the present study, the subjects showed greater adherence to HH in the post-intervention moment, after the procedures and in aseptic procedures. All health professionals showed greater adherence to HH after the intervention.

One limitation of the study is the unavailability of data on the technique of hand hygiene used.

In view of the above mentioned, we stress the importance of educational interventions regarding hand hygiene in health services, especially in urgent and emergency care units, in order to ensure the quality of care, promote patient safety and reduce hospital costs. Therefore, nurses should be aware that their educational function is a valuable asset in the promotion and prevention of care-related infections.

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