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Adhesion to hand hygiene by the nursing team

Adesão à higienização das mãos pela equipe de enfermagem

Adhesión a la higienización de las manos por el equipo de enfermería

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ABSTRACT

Objective: To analyze the adherence to hand hygiene by the nursing team. **Methods**: Observational study developed with 85 nursing professionals in the months of September and October of 2018. A script recommended by the National Health Surveillance Agency (ANVISA) and a validated checklist was used. **Results**: Regarding the characterization of the technique and hand hygiene situation, it was observed that 100% of the nursing assistants presented short nails, performed the nail cleaning, the tips of the fingers and the wrists, but no auxiliary carried out the hygiene of the hands when entering the unit. All the evaluated professionals used the liquid soap to hygienize the hands. The time spent for hygiene was 10-20 seconds between all the categories studied. **Conclusion**: No category obtained 100% correct hand hygiene as recommended by ANVISA. Interventions are necessary to obtain full compliance by nursing professionals.
Descriptors: Hospital Infection; Disinfection of hands; Patient safety; Nursing team.

RESUMO

Objetivo: Analisar a adesão à higienização das mãos pela equipe de enfermagem. **Métodos:** Estudo observacional desenvolvido com 85 profissionais de enfermagem nos meses de setembro e outubro de 2018. Utilizou-se um roteiro preconizado pela Agência Nacional de Vigilância Sanitária (ANVISA) e um checklist validado. **Resultados:** A respeito da caracterização da técnica e situação de higienização das mãos, observou-se que 100% dos auxiliares de enfermagem apresentou unhas curtas, realizou a higienização das unhas, extremidades dos dedos e dos punhos, porém, nenhum auxiliar realizou a higienização das mãos ao entrar na unidade. Todos os profissionais avaliados utilizaram o sabão líquido para higienizar as mãos. O tempo gasto para a higiene foi de 10-20 segundos entre todas as categorias estudas. **Conclusão:** Nenhuma categoria obteve 100% de higienização correta das mãos como recomendado pela ANVISA. Intervenções são necessárias para se obter adesão total pelos profissionais de enfermagem.
Descritores: Infecção Hospitalar; Desinfecção das mãos; Segurança do paciente; Equipe de enfermagem.

RESUMÉN

Objetivo: Analizar la adhesión a la higienización de las manos por el equipo de enfermería. **Métodos**: Estudio observacional desarrollado con 85 profesionales de enfermería en los meses de septiembre y octubre de 2018. Se utilizó un itinerario preconizado por la Agencia Nacional de Vigilancia Sanitaria (ANVISA) y un checklist validado. **Resultados**: En cuanto a la caracterización de la técnica y la situación de higiene de las manos, se observó que el 100% de los auxiliares de enfermería presentaron uñas cortas, realizaron la limpieza de las uñas, las puntas de los dedos y las muñecas, pero ningún auxiliar realizó la higiene del manos al entrar en la unidad. Todos los profesionales evaluados utilizaron el jabón líquido para higienizar las manos. El tiempo dedicado a la higiene fue de 10-20 segundos entre todas las categorías estudiadas. **Conclusión**: Ninguna categoría obtuvo una higiene de manos correcta al 100% según lo recomendado por ANVISA. Las intervenciones son necesarias para obtener el pleno cumplimiento de los profesionales de enfermería.
Descriptores: Infección hospitalaria; Desinfección de manos; Seguridad del paciente; Equipo de enfermería.

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INTRODUCTION

The importance of Hand Hygiene (HH) to reduce the transmission of diseases has been recognized since the nineteenth century, first proposed by Smmelweis, a physician who instituted mandatory HH between the care of each patient, reducing mortality. From that moment on it was scientifically demonstrated that HH can prevent the transmission of pathogens, thus reducing the rates of care-related infections.[1]

The hands are body structures widely used in direct contact with the patient, being the main means of transmission of microorganisms. In the microbiota of the hands there are two types of microorganisms, the resident ones and the transitory ones. Residents are largely gram-positive bacteria such as coagulase-negative *Staphylococcus*, *Micrococcus* and some species of corynebacteria.[2]

In this way, non-adherence to HH compromises the quality and safety of the care provided. In order for this transmission to be broken, it is necessary to adopt basic hygiene routines in the hospital environment and HH is considered the routine with the greatest impact. Thus, HH is recommended before and after contact with the patient, before performing procedures, after exposure to body fluids, and after contact with areas close to the patient.[3]

Among the risks that the nursing team is exposed, the biological risk is more frequent. In addition to the pressures, patients are also exposed to risks during care and the infections caused by such exposure are health care-related infections, a major public health problem that can increase antibiotic resistance, prolong hospitalization patients and raise costs for the health system.[2]

HH is one of the factors that may help reduce health care-related infections. The technique should be performed in situations where pathogens are transmitted between patients and environments and after contact with contaminated body fluids, articles or equipment.[4]

In view of the above, the present study aims to analyze adherence to HH by the nursing team in the hospital.

METHODS

This is a descriptive research, with a quantitative approach carried out in a teaching hospital, research and extension, of public character, of reference for the middle north of Brazil.

The research population consisted of 109 professionals from the nursing team. The research sample consisted of 85 professionals. This number was calculated using formula: $n = \frac{Z^2 x\ 0{,}25\ x\ N}{E(N-1)+Z^2\ X\ 0{,}25}$, where Z is the critical value, E the margin of error and N the population size for the significance level of 95% and margin of error of 5%.

For the definition of the sample process, the following inclusion criteria were considered: being a professional of the nursing team and placed in the clinics of greater complexity: neurological, medical clinic or cardiovascular, because it is where the highest infection rate occurs in the hospital. As exclusion criterion: nursing professionals who did not have direct contact with the patient or who did not do invasive procedures.

Data were collected from September to October 2018, with an average of two hours of daily observation per work shift, totaling 120 hours of observation in medical, neurological and cardiovascular clinics. In order to reduce bias, professionals were invited to participate in the research, and only in another meeting were the HH techniques observed. A semi-structured interview script was used as recommended by the Brazilian Health Regulatory Agency (as per its Portuguese acronym, ANVISA) HH observation manual and a check list based on a list of procedures for HH (adapted).[5]

Statistical Package for the Social Sciences (SPSS), version 20.2 was used to analyze the data and descriptive statistics were calculated for the quantitative variables and frequencies for the qualitative variables.

The study obeyed the principles of Resolution 466, of December 12, 2012, and was approved with the opinion nº 2,788,290.

RESULTS

Twelve nurses, 66 nursing technicians and 7 nursing assistants participated in the study. Regarding the age group, 37.37% of nurses, 38.09% of nursing technicians and 100% of nursing auxiliaries were 36 years of age or older.

As for sex, 90% were female. About 90% and 86% of nurses and nursing technicians, respectively, have a training period of 1 to 10 years and only 10% and 14% of them have been trained for more than 10 years. In the auxiliary nursing category, 100% of professionals have more than 10 years of training. Regarding the time of hospital performance, 73% of nurses and 67% of nursing technicians have 1 to 10 years of service. In the auxiliary nursing category, 100% of professionals have more than 10 years of service.

Regarding the characterization of the technique and situation of MH by professional category, it was observed that the removal of adornments before MH was performed by 85% of nursing assistants. This category also presented 100% of short nails, 85% adherence to hygiene of interdigital spaces, 100% adhesion to nail and finger cleansing and 100% of wrists. The nurses had 91.67% adherence to the hygiene stage of the palms and back of the hands, satisfactory hand rinsing and HH when entering the unit. The nursing technicians had 95.45% of adhesion to the palm cleaning of the hands, 68.18% of adhesion to the hygienization of the thumb and 53.03% closed the faucet with paper towel, according to table 01.

Table 01: Hand hygiene technique and situations by professional category. Teresina, Piauí, Brazil, 2018.

		Professional category							
		Nurse		Nursing Technician		Nursing assistant		Total	
		nº	%	nº	%	nº	%	nº	%
Removed jewelry	Yes	9	75.00	56	84.85	5	85.00	70	84.71
	No	3	25.00	10	15.15	2	15.00	15	15.29
Has short nails	Yes	10	83.33	58	87.88	7	100.00	75	88.24
	No	2	16.67	8	12.12	-	-	10	11.76
Palm to palm	Yes	9	75.00	63	95.45	5	85.00	77	92.94
	No	3	25.00	3	4.55	2	15.00	8	7.06
Palm with back	Yes	11	91.67	54	81.82	4	75.00	69	84.71
	No	1	8.33	12	18.18	3	25.00	16	15.29
Interdigital Spaces	Yes	7	58.33	44	66.67	5	85.00	56	68.24
	No	5	41.67	22	33.33	2	15.00	29	31.76
Thumb	Yes	8	66.67	45	68.18	4	55.00	57	70.59
	No	4	33.33	21	31.82	3	45.00	28	29.41
Fingernails and toes	Yes	9	75.00	40	60.61	7	100.00	56	65.88
	No	3	25.00	26	39.39	-	-	29	34.12
Wrists	Yes	9	75.00	44	66.67	7	100.00	60	70.59
	No	3	25.00	22	33.33	-	-	25	29.41
Closed faucet with paper	Yes	2	16.67	35	53.03	2	15.00	39	51.76
	No	10	83.33	31	46.97	5	85.00	46	48.24
Satisfactory rinse	Yes	11	91.67	58	87.88	5	85.00	74	89.41
	No	1	8.33	8	12.12	2	15.00	11	10.59
When entering the unit	Yes	11	91.67	54	81.82	-	-	65	76.47
	No	1	8.33	12	18.18	7	100.00	20	23.53

Regarding the characterization of the products used and the time spent for HH by professional category, it was observed that 100% of the nurses and 100% of the nursing auxiliaries used glycerinated alcohol for HH. Regarding the soap used, no professional made use of bar soap, 100% of the nurses, technicians and nursing assistants used the liquid soap for HH. The paper towel recycled was used by 100% of nursing assistants. The time spent for HH was 10-20 seconds between all the categories studied, according to table 02.

Table 02: Products used, time spent for hand hygiene, by professional category. Teresina, Piauí, Brazil, 2018.

		Professional category							
		Nurse		Nursing Technician		Nursing assistant		Total	
		nº	%	nº	%	nº	%	nº	%
Used glycerinated alcohol	Yes	12	100.00	59	89.39	7	100.00	78	91.76
	No	-	-	7	10.61	-	-	7	8.24
Soap used	Bar	-	-	-	-	-	-	-	0.00
	Liquid	12	100.00	66	100.00	7	100.00	85	100.00
Paper towel	Recycled	9	75.00	54	81.82	7	100.00	70	74.12
	Not Recycled	3	25.00	12	18.18	-	-	15	25.88
Time spent	00 to 10s	4	33.33	16	24.24	2	20.20	22	31.76
	10 to 20s	6	50.00	36	54.55	4	69.70	46	49.41
	20 to 30s	2	16.67	13	19.70	1	10.10	17	17.65
	More than 30s	-	-	1	1.52	-	100.00	1	1.18

Regarding HH before and after invasive and non-invasive care performed by the technical categories of nursing and nursing auxiliaries, it was observed that the nursing technicians sanitized the hands before the medication preparation 95.45% and after 93.94%, before venipuncture 81.82% and after 77.27%, before the diaper change 84.85% and after 81.82%. Regarding hygiene before medication administration, 100% of the nursing assistants sanitized the hands before and after the procedure, according to table 03.

Table 03: Hand hygiene before and after invasive and non-invasive care by technicians and nursing assistants. Teresina, Piauí, Brazil, 2018.

		Professional category					
		Nursing Technician		Nursing assistant		Total	
		nº	%	nº	%	nº	%
Before preparing medication	Yes	63	95.45	5	85.00	68	90.89
	No	3	4.55	2	15.00	5	9.11
After preparation of medication	Yes	62	93.94	7	100.00	69	94.52
	No	4	6.06	-	-	4	5.48
Before venipuncture	Yes	54	81.82	3	45.45	57	57.97
	No	12	18.18	4	54.55	16	42.03
After venipuncture	Yes	51	77.27	5	85.00	56	79.45

	No	15	22.73	2	25.00	17	20.55
Before changing diapers	Yes	56	84.85	2	25.00	58	76.71
	No	10	15.15	5	85.00	15	23.29
After changing diapers	Yes	54	81.82	7	100.00	61	73.97
	No	12	18.18	-	-	12	26.03
Before administering medication	Yes	58	87.88	7	100.00	65	89.04
	No	8	12.12	-	-	8	10.96
After administering medication	Yes	40	60.61	7	100.00	47	64.38
	No	26	39.39	-	-	26	35.62

Regarding HH before invasive care by nurses, it was observed that 91.67% performed the hygiene before bladder catheterization and 100% after the procedure. 100% of the professionals performed HH before and after the oro- and nasogastric probing, according to table 04.

Table 04: Carrying out hands hygiene before invasive care by nurses. Teresina, Piauí, Brazil, 2018.

		Nurse		Total	
		nº	%	nº	%
Before Bladder Catheterization	Yes	11	91.67	11	91.67
	No	1	8.33	1	8.33
After Bladder Catheterization	Yes	12	100.00	12	100.00
	No	-	-	-	-
Before orotracheal aspiration	Yes	8	66.67	8	66.67
	No	4	33.33	4	33.33
After orotracheal aspiration	Yes	7	58.33	7	58.33
	No	5	41.67	5	41.67
Before oro/nasogastric probing	Yes	12	100.00	12	100.00
	No	-	-	-	-
After oro/nasogastric probing	Yes	11	91.67	11	91.67
	No	1	8.33	1	8.33

Regarding the factors that make HH difficult, it was observed that the number of adequate sinks corresponds to 67.06%, of these 28.24% are close to the places of accomplishment of the procedures. The manual taps are equivalent to 37.65%, the automatic 77.65% and the taps with pedal 34.12%. In

43.53% of HH situations there was lack of soap and in 45.88% lacking paper towel

DISCUSSION

In this study, the greatest number of opportunities observed for HH was of nursing professionals, followed by the auxiliaries and last of the nurses, this is due to the fact that the technical and auxiliary professionals remain in prolonged contact with the patient compared to the others professionals, needing to perform the HH technique more often, while nurses had fewer opportunities due to the overhead of the administrative services. A similar result was found in a study carried out in a university hospital in the state of Paraná[6] and diverges with the findings of a study carried out in the southern region of Brazil in which nurses had more opportunities and performed HH more often.[7]

Regarding the characterization of the participants, the most representative is female dominance in the nursing area, corroborating with the findings of the study performed in a public hospital in the north of Paraná.[8] It is worth mentioning that the female predominance profile is a historical result characteristic of the profession.

Regarding professional training, the largest number of nursing technicians was 86%, and the majority of the professionals observed were older than 36 years of age, as found in another Brazilian state in which the average was 36.7 years.[2]

The time of operation in the hospital that prevailed in the categories of nurses and technicians was from 1 to 10 years, only nursing assistants have more than 10 years in the institution. In a neonatal intensive care unit located in Curitiba, 25% of the professionals worked less than one year, different from that presented in the present study.[9]

Regarding the size of the nails and the use of adornments by professional category, it is observed that not all professionals have short nails and remove the adornments like bracelets, jewels and watches before HH, this fact was also observed in a research carried out in a hospital in Rio de Janeiro. The use of adornments by health professionals at the time of the HH technique and during their care practice provides the continuity of the resident flora which facilitates the dissemination of some microorganisms that reflect in the increase of infection rates. This increase has an impact on the worsening of hospitalized patients.[10]

Regarding HH technique and situations, the results show that none of the categories of nurses, technicians and nursing auxiliaries performed 100% of the technique according to the step-by-step approach recommended by ANVISA and WHO, these data coincide with the results of a national study where the great majority of professionals did not sanitize all parts of the hands, causing harm to the patient, since the efficacy of HH depends on both the duration and the performance of the correct technique.[2]

Regarding the correct HH technique, one of the main errors identified was the closure of the faucet with the already sanitized hands, we can point out the same error in a national study, where 54% of the professionals after cleaning their hands turn off the manual faucet without

the use of paper towel.[4] Regarding the hand-operated faucet ANVISA emphasizes that at the end of the HH the professional should use the towel paper or use the elbows to turn off the tap. It should be noted that the conditions of the paper towel should be: soft, dry fast, aesthetically acceptable and not release particles.

The HH technique is inadequate, most of the time, due to the negligence of some steps of this procedure and the service overload. There is a concern about the amount of time the professional does the HH and not with the quality of this technique. As for the HH technique, it is observed that the failures occurred mainly due to the non-use of paper towel when closing the tap, extension of the parts to be rubbed, use of jewelry, large nails etc.[11]

As for the products used for HH the preference for the use of water and liquid soap is greater than that of glycerinated alcoholic solution, a study carried out in a hospital in the state of São Paulo obtained this same result.[2] Studies show that alcoholic preparations have several advantages such as: the elimination of most germs; short time to perform the technique; ease of availability of the product at the point of care; better skin tolerability and little or no change in physical structure for the installation of dispensers.[12]

In the present study, the time for HH was, on average, 10 to 20 seconds, a shorter time than that required by ANVISA, this same result was found in a study carried out in the Southeast Region of Brazil.[4] Performing the HH technique quickly and negligently can increase the incidence of hospital infections, especially for professionals who provide care to more vulnerable patients. The HH ANVISA manual points out that the average time required for HH with soap and water is 40 to 60 seconds. This time should be sufficient to remove the microorganisms that colonize the superficial layers of the skin, also removing the dirt that is favorable to the permanence and the proliferation of microorganisms. The duration of HH with alcohol is 20 to 30 seconds, ideal to reduce the microbial load of the hands.[13]

Regarding the performance of HH before and after non-invasive procedures, it was observed that in diaper changes, in drug therapy and in venipuncture, the frequency of HH by nursing auxiliaries and technicians was higher before these procedures, showing that the habit of hand hygiene is improving and that professionals are aware of the importance of HH in the control of IRAS. This result is in agreement with the findings compiled by a literature review, where the general rate of adherence to HH "after" procedure, 27%, was higher than the general rate of adherence to "before" HH, 6.4%, in all observed procedures.[14]

Regarding the performance of HH before and after the invasive procedures observed (bladder catheterization, orotracheal aspiration and passage of oro and nasogastric tube), it was verified that the nurses hygienized the hands almost 100% of the time before and after performing these procedures. These data are in agreement with the findings of a national study conducted in the southern region where nurses sanitized their hands in only 51% of the situations. In invasive procedures, the risk of

infection is greater, especially when patients are considered susceptible to infections by multiresistant microorganisms.[7] Therefore, if the correct technique is not performed, it compromises the effectiveness of HH, consequently the safety of the client.[3]

Regarding the factors of the physical structure and inputs that make HH difficult, studies on structural conditions mention that low rates of adhesion of professionals to HH could be related to the unavailability of inputs (alcohol gel, neutral soap and paper towel), as well as the lack of knowledge recommended recommendations, dermatological allergy and lack of infrastructure, among the main.

It was observed that the hand hygiene sinks are adequate, but not all are close to the places where the procedures are performed, where this can interfere with the adhesion of HH by the professionals. A nearby sink increases the chances of HH by nursing professionals, as these are most often overloaded with daily hospital work.[14]

On taps found, it is observed that there is a larger quantity of automatic taps 77.75%, but that there are still considerable quantities of manual and pedal taps. One of the solutions proposed by the ANVISA is the availability of automatic hand operated taps, which is a way to avoid that the effects of HH are antagonized by the contamination through the germs present in the manual controls of the taps.[13]

In the washbasins, it was observed that in the vast majority, 56.47% did not lack soap, but in 54.12% there was a lack of paper towel, which is an indispensable material for the closure of manual taps, thus avoiding contamination of the already sanitized hands. This result is contrary to what was done in a region of Northeast Brazil where the professionals observed had conditions of total availability of inputs, but HH adhesion was low.[15]

The study presents limitations such as the fact that it did not address other professional categories in the health area and did not evaluate the knowledge of the participants in relation to the recommended technique. However, the analyzed category represents the highest percentage of professionals in direct patient care and achieves the goal proposed by this study.

The manuscript brings important contributions to nursing and public health, related to the identification of flaws in the HH technique; recognition of situations in which HH is needed, but that professionals do not perform; and to the factors that hinder the adhesion of HH. These results corroborate a reflection on the current scenario of HH. The literature describes that there is awareness of the importance of HH, however, there is often a lack of raw materials, structure and supervision for the membership of this practice is unanimous, which contributes to the growth of IRAS rates, whether in a hospital environment or not.[17]

CONCLUSION

HH at the hospital institution investigated is present throughout the nursing team, but often the step-by-step HH technique (palm to palm, palm to back, interdigital spaces, thumb, nails and extremities to fingers and wrists) is not followed correctly, which may compromise the quality of HH and may lead to the emergence of

IRAS. Regarding the reality observed in this study, interventions to be employed should address the incentive to join the correct HH technique with the aim of provoking behavioral and attitudinal changes of nursing professionals; as well as provide inputs to ensure the needs of HH practice and thus improve the quality of customer care.

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