ABSTRACT
Objective: to analyze the adherence to hand hygiene of health professionals who provide cancer care and its correlation with the variables professional category, indication, type of conduct and used input. Method: quantitative, cross-sectional study, with a sample of 1397 observation opportunities of the five moments of hand hygiene at a cancer hospital. Data were collected by means of a form and analyzed using Graph Pad Prism 5.0. Results: the overall adherence rate was 29%, classified as undesirable or tolerable, with higher rates for nurses. There were no significant differences between adherence and category (p<0.0001), as well as in the five moments (p<0.0001). The moment “after exposure to bodily fluids” showed higher rates, predominating the use of water/soap. Conclusion: adherence to hand hygiene was classified according to Carter’s index as tolerable, outside the recommendations advocated by the World Health Organization. Descritores: Hand Hygiene; Patient Care Team; Patient Safety; Oncology Service; Hospital; Quality Control.

RESUMO
Objetivo: analisar a aderência à higienização das mãos de profissionais de saúde que prestam assistência oncológica e sua correlação com as variáveis categoria profissional, indicação, tipo de conduta e insumo utilizado. Método: estudo quantitativo, de corte transversal, com amostra de 1397 oportunidades de observação dos cinco momentos de higienização das mãos em um hospital de oncologia. Os dados foram coletados por meio de um formulário e analisados pelo Graph Pad Prism 5.0. Resultados: a taxa de aderência global foi de 29%, classificada como indesejável ou sofrível, com maior taxa para os enfermeiros. Houve significância entre a aderência e categoria (p<0,0001), bem como nos cinco momentos (p<0,0001). Observou-se maior taxa no momento “após exposição a fluidos corpóreos”, predominando o uso da água/sabão. Conclusão: a aderência à higienização das mãos foi classificada segundo o índice de Carter como sofrível, encontrando-se fora das recomendações preconizadas pela Organização Mundial de Saúde. Descritores: Higiene das Mãos; Equipe de Assistência ao Paciente; Segurança do Paciente; Equipe de enfermagem; Serviço Hospitalar de Oncologia; Controle de Qualidade.

ADHERÊNCIA DE PROFISSIONAIS DE SAÚDE À HIGIENIZAÇÃO DAS MÃOS
ADERÊNCIA DE LOS PROFESIONALES DE SALUD PARA LA HIGIENIZACIÓN DE LAS MANOS

Eliana Ofelia Llapa-Rodriguez¹, Júlian Katrin Albuquerque de Oliveira², Max Oliveria Menezes³, Luciana de Santana Lóbo Silva⁴, Daniel Marques de Almeida⁵, David Lopes Neto⁶

RESUMEN
Objetivo: analizar la adherencia a la higiene de las manos de profesionales de salud que prestan asistencia oncológica y su correlación con las variables de la categoría profesional, indicación, tipo de conducta y de entrada utilizada. Método: estudio cuantitativo, de corte transversal, con una muestra de 1397 oportunidades para la observación de los cinco momentos de la higiene de las manos en un hospital de oncología. Los datos fueron recolectados por medio de un formulario y analizados mediante Graph Pad Prism 5.0. Resultados: la tasa global de cumplimiento fue del 29%, la cual fue clasificada como indeseable o sofríble, con mayor tasa para los enfermeros. Houve significancia entre la adherencia y categoria (p<0,0001), así como en los cinco momentos (p<0,0001). Se observó una mayor tasa en el momento “después de la exposición a fluidos corporales”, predominando el uso de agua/jabón. Conclusión: la adherencia a la higiene de las manos se clasifica según el índice de Carter como sofríble, encontrándose fuera de las recomendaciones recomendadas por la Organización Mundial de la salud. Descritores: La Higiene de Manos; Equipo De Atención Al Paciente; Seguridad del Paciente; Equipo de enfermagem; Servicio Hospitalar de Oncología; Controle de Qualidade.
INTRODUCTION

Hand hygiene (HH) is a simple action, with significant impact and proven efficacy in the prevention of healthcare-related infections (HCRI), being considered an excellent indicator of quality for patient safety.1

The World Health Organization (WHO) estimates that, worldwide, HCRI affect one every ten patients, and its their incidence is more frequent in developing countries. Approximately 19,000 health units, in 177 countries, support HH through health campaigns, such as Save lives: clean your hands.2

Historical facts mark the path of including HH at health services, particularly regarding the observation made in 1847 by the physician Ignaz Philipp Semmelweis, which related the reduction of parients’ mortality to health professionals using chlorine solution for previous hand hygiene.3,4 In this perspective, in 1854, during the Crimean War, Florence Nightingale reduced the mortality rates by adopting preventive measures of washing professionals’ hands and hygiene of patients and wards.4

In the biological field, the skin is colonized by bacteria and fungi that heterogeneously occupy different areas of the human body, highlighting the hands of health professionals, with an estimated concentration between 10^4 and 10^6 Colony Forming Units per cm².4 Thus, in order to reduce the microbial load and prevent its transmission, sanitizing the hands with soap and water or antiseptic becomes essential, by means of degermation, simply wash and antisepsis, applied to health care practice,4,5 since hand hygiene prevents cross-transmission of microorganisms present in resident and transient microbiota.3

Even with the achievement of evidence about the benefits of HH over time, the professionals’ adherence to this practice is still incipient and in disagreement with the guidelines recommended by the World Health Organization, which may be expanding the incidence of HCRI and, consequently, the increase in mortality of children and adults, and the elevation of health costs.1,3,6

In the United Unidos of America, a study conducted in 183 hospitals with 11,282 patients found that 4.0% of them presented one or more healthcare-associated infections, especially pneumonia (21.8%), infection of the surgical site (21.8%) and gastrointestinal tract (17.1%).7

In Brazil, in 2010, given the epidemiological data on healthcare-associated infections, the National Epidemiological Surveillance Agency (Anvisa - Agência Nacional de Vigilância Epidemiológica) deployed the surveillance system for primary bloodstream infections associated with central venous catheter as a starting point for subsequent release, in 2013, of the National Program for Prevention and Control of HCRI, especially, in compliance with the strategic action of hand hygiene.8

In contrast to the WHO recommendation about the importance of handwashing in health services, factors like time for handwashing, lack of infrastructure and inputs, skin irritation and inadequate human resources dimensioning are considered barriers to an effective accession to HH.9 Moreover, there is the weakness identified in the formation process of health professionals, unfavorable to the safety culture in healthcare practices.10

The WHO, by considering HCRI a global public health problem, in 2004, launched the World Alliance for Patient Safety, whose Goal 5 - Reduce the risk of healthcare-associated infections aims at increasing the quality of health services. The following year, linked to this alliance, the First Global Patient Safety Challenge was created, with the theme Clean Care is Safer Care, with the purpose of preventing the transmission of pathogens through hand hygiene promotion and catalyzing global commitments and actions for preventing and reducing infections.11

Contextualizing, in Brazil, regarding the international scenario to reduce nosocomial infections, the first initiatives related to global challenges were implemented in 2007 by means of Multimodal Strategy to Improve Hand Hygiene at Health Services11, consolidated in 2013 with the launch of the Patient Safety Plan at Public Services, which introduced actions in risk management and the five moments essential to HH.12

In this perspective, the Brazilian Ministry of Health started to require the incorporation of essential components to control HCRI, considering the need for adhesion to HH as a measure that prevents cross-transmission of microorganisms. Not unlike that reality, cancer services stand out due to their type of clientele, with significant vulnerability to pathogens13-14, bearing in mind that, in these services, patients are submitted to multiple diagnostic and therapeutic interventions that prolong their stay in the hospital environment.15 The exposure to biological hazards, the presence of neutropenia, radiotherapeutic treatment, use of
immunosuppressive drugs and antibiotics, manipulation of catheters and surgical procedures increase the risk for infections, which demand a greater assistance by the healthcare professional.\textsuperscript{16}

In this respect, a national survey conducted with 70,662 oncological patients identified an overall rate of 8.24% of HCRi, and the most affected topographies were surgical site (26.11%), blood stream (24.11%) and respiratory tract (18.50%). The same study showed rates of lethality and mortality associated with infection of 23.86% and 1.37%, respectively\textsuperscript{15}, which demonstrates the magnitude of the problem.

**OBJECTIVE**

- To analyze the adhesion to hand hygiene by professionals who provide cancer care and its correlation with the variables professional category, indication, type of conduct and used input.

**METHOD**

Quantitative, cross-sectional study, carried out in the department of adult and pediatric oncology of a reference hospital of Aracaju, state of Sergipe, northeastern region of Brazil.

The research sites were oncological units that offer specialized and high-complexity services for definitive diagnosis and treatment of patients with neoplasms. The hospital offers a multidisciplinary team composed by physicians, nurses, nursing technicians/assistants, physiotherapists, dieticians, speech therapists, laboratory technicians, social workers, and psychologists. The physical structure of the hospital unit consists of 39 beds; of these, 21 constitute the adult ward and 18 the pediatric ward.

Regarding the infrastructure and equipment necessary to perform the HH, in the observation periods, the pediatric unit had an external sink in the nursing station, with liquid soap and paper towel; the isolation bed had a sink, a dispenser of alcohol-gel and liquid soap and other wards had a dispenser of alcohol-gel. The adult unit had two external sinks with liquid soap dispensers and paper towel, one in the corridor and the other in the nursing station, the insulations had sinks and dispensers of liquid soap.

The sample constitution considered the observation opportunities of the five moments of HH recommended by WHO (before the contact with the patient, before aseptic procedure, after body fluids, after contact with the patient and after touching the patient vicinity), carried out by multidisciplinary teams of the selected units, and the sample size calculation used the criteria described in the HH manual recommended by WHO. In addition, to ensure the representativeness of the participants, 200 HH procedures should be observed for each work shift, totaling 1200 opportunities for both oncological units selected (adult and pediatric), however, the present study recorded 1397 actions involving the HH procedure.\textsuperscript{5}

Data collection occurred from December 2014 to December 2015, in three work shifts (morning, afternoon and evening), by means of non-participatory observation. The used instrument the note form 34 of the Technical Reference Manual for Hand Hygiene. There was a previous training for both observers and recorders of data regarding the recommended five moments, as well as to the proper completion of the search form. To fulfill this purpose, the training material provided by WHO was used.\textsuperscript{3}

Methodologically, the observers remained at each unit for two hours and during the period of greater implementation of activities. For this, a previous immersion was performed at each unit, identifying the routines and periods of increased activity in each shift. The observers were positioned at strategic points of the wards, without disrupting the activities of the unit to observe and record the opportunities for HH and the type of action performed.

The professionals were randomly observed in pre-defined moments according to the research schedule, being the actions recorded only when the professional had availability and access to all supplies and materials necessary for hand hygiene.

Data analysis used descriptive and analytical statistics, using Graph Pad Prism 5.0 software. For descriptive analysis, we performed calculations of frequency and for the analytical test, chi-squared ($\chi^2$), considering significant difference when $p$-value<0.05. Furthermore, we used the formula for calculating the adhesion recommended by WHO, as follows:

\begin{equation}
\text{Adherence} \left(\%\right) = \frac{\text{Performed actions/Opportunities}}{100}
\end{equation}

To determine the degree of conformity of the evaluated process (hand washing), the positivity index proposed by Carter was used, which allows determining the conformity of care practice in terms of quality, where: 100% of positivity represents a desirable...
assistance; 90 to 99% adequate assistance; 80 to 89% a safe handling; 70 to 79% a borderline assistance and less than 70% an undesirable or tolerable assistance. 17

The research protocol was approved by the Research Ethics Committee of the Federal University of Sergipe, CAAE n. 24183113.2.0000.5546.

RESULTS

There were recorded 1397 observations involving hand hygiene, 780 (56%) in the pediatric oncological unit and 617 (44%) in the adult oncological unit. Among the actions performed by professionals, 587 performed by nursing technicians/assistants (42%); 339 by nurses (24%); 242 by physicians (17%); 137 by physiotherapists (10%) and 131 (7%) by other health professionals (laboratory technicians, nutrition technicians, nutritionists, social assistants and psychologists).

The overall adhesion rate to the procedure among the observed professionals was 29% (407 actions), classified as an undesirable and tolerable assistance. The highest rate (38%) was for the category of nurses, with 129 actions and the lowest rate (10%) for the category other professionals (nine actions), there was a statistical difference between the different categories (p <0.0001) regarding adhesion to this procedure (Table 1).

<table>
<thead>
<tr>
<th>Professional category</th>
<th>Hand hygiene adherence rate(%)</th>
<th>p-value &lt;0,0001*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>Nurse assistant</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Doctor</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

*Statistically significant differences. Chi-square test was used to assess them.

Regarding the choice of conduct and input for hand hygiene by professionals, of the 407 actions, 344 (85%) used soap and water, 63 actions (15%) used alcohol-gel, with a higher proportion in medical category - 11 (25%) and the use of soap and water in the category physiotherapists - 45 (92%), without statistical difference (p = 0.0995) between the categories regarding used of hand hygiene used (Table 2).

<table>
<thead>
<tr>
<th>Categoria Profissional</th>
<th>Nº of HH actions</th>
<th>HH with alcohol gel n</th>
<th>HH with soap and water n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse</td>
<td>129</td>
<td>17</td>
<td>112</td>
</tr>
<tr>
<td>Doctor</td>
<td>44</td>
<td>11</td>
<td>33</td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>49</td>
<td>04</td>
<td>45</td>
</tr>
<tr>
<td>Technician/Auxiliary</td>
<td>176</td>
<td>28</td>
<td>148</td>
</tr>
<tr>
<td>Others</td>
<td>09</td>
<td>03</td>
<td>06</td>
</tr>
<tr>
<td>Total</td>
<td>407</td>
<td>63</td>
<td>344</td>
</tr>
</tbody>
</table>

HH: hand hygiene

Regarding the five moments for HH, the largest adhesion of professionals was at the time “after exposure to bodily fluids” and the lowest at “after environments near the patient”. The adhesion to the recommended moments of HH was classified as undesirable or tolerable; there was statistically significant difference between the moments indicated for HH and adhesion to the procedure (p<0.0001) (Table 3).

<table>
<thead>
<tr>
<th>Indicated moments for HH</th>
<th>HH adherence rate (%)</th>
<th>p-value &lt; 0.0001*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- before touching a patient</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>2- before clean/aseptic procedure</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>3- after body fluid exposure risk</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>4- after touching a patient</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>5- after touching patient surroundings</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>
DISCUSSION

Hand hygiene is the most effective procedure to prevent and control assistance-related infection. This practice should be valued in the oncological services, considering the immunodepression presented by patients treated in this unit, as well as the impact on morbidity and mortality.

The data analysis allowed identifying an unwanted assistance, and consequent low adherence to HH regarding the positivity rate. There was a similar situation at a teaching hospital in Paraná that presented an adherence rate of 26.5%. In consonance with these studies, a North American university hospital found rates between 23.5% and 27.1%, demonstrating that the variation in rates of adherence was influenced by the climate of the region.

Studies on structural conditions mention that low rates of professionals' adhesion to HH could be related to the unavailability of inputs (alcohol-gel, soap, detergent and paper towel), as well as lack of knowledge on recommendations, dermatological allergies and lack of infrastructure, as the main ones. Nevertheless, this justification is different from this study, once the observed professionals had total availability of inputs, as well as this study did not evaluate other factors and working conditions.

Regarding the choice of conduct and inputs for HH, the results indicate low compliance with the practice of using alcohol gel, corroborating surveys conducted in the southeast and south regions of Brazil, which showed, respectively, adherence rates of 6.3% and 12.5% for the use of alcohol gel and water and soap. These results show that this group of professionals preferred soap and water as the best option for controlling HCRI. In contrast, a study at a university hospital in Turkey showed that 65% of the nurses had preference for alcoholic antiseptic solutions.

Regarding the use of products for HH, friction with alcohol gel 70% presents greater effectiveness when compared to the use of common or antiseptic soaps, considering as positive points the short time for hygiene, the input availability at the time of the assistance, no need for special infrastructure and good tolerability of the skin.

As for the challenge proposed by the WHO for adherence to HH practice in the five moments, this study identified a higher rate of adhesion after contact with body fluids, which shows that health professionals often perform hand hygiene as a form of selfcare, which was also evidenced in other studies.

Also regarding indication, according to classification of five times, the touch on the surfaces near the patient showed the lowest rate found, a worrisome fact which is worrisome, considering the risk of contamination and the possibility of uncontrolled facilitator of dissemination of microorganisms in the hospital environment. However, in contrast, a study performed at an intensive therapy unit, Rio Grande do Sul, for this same indication, identified 49.1% rate, greater than the one presented in this study. In this respect, attention is called to the fact that it shows that the professional is aware of the risks related to contact with blood and body fluids, different from the attention given when it refers to the relative risk to the surfaces near the patient, emphasizing that the risk of infection is only perceived when observed the imminent danger involving biological material potentially contaminated.

In relation to the professional categories observed, all presented a rate of adherence to HH lower than recommended by WHO, highlighting the medical categories' lowest rates and the nurses with the highest rate. In line with these findings, outcomes of a Brazilian Child-Mother Hospital presented rates of 39%, 27%, 33% and 23% for nurses, nursing technicians, physiotherapists and physicians, respectively. Nevertheless, the southern region of the country showed discordant results, with a higher rate among physiotherapists (53.5%) and lower for the nursing technicians/assistants (29.8%).

CONCLUSION

The rate of adherence to hand hygiene by healthcare professionals is outside of the recommendations proposed by the WHO and classified as undesirable or tolerable. The main input used by professionals to perform the HH procedure is the combination of soap and water at the expense of alcohol-gel.

Among the five moments recommended, the most used was the indication after exposure to biological material, reflecting the professionals' concern with their safety. The presented results alert the fragility presented during the care provided to cancer patients in the observed units.

In this context, there is need to develop strategies for actions of service education that ensure a safe and quality care. On the other hand, one expects a proactive role by...
the teams of hospital infection control, in order to provide the basic inputs for the completion of the HH procedure, as well as monitor and disseminate the adherence by health professionals to hand hygiene, since this conduct represents a weakness in the target institution of this study.

The evidence of a higher rate of adherence to the HH by nurses, even below the recommendations, is a positive factor, considering that these professionals develop their activities at health services with various possibilities of contacts with different patients, which makes collaborative agents in change of culture concerning the patient safety for incorporation of HH, as indicated by the WHO.

Despite being a simple procedure, the adhesion to the HH is still a challenge for the managers of health services. Therefore, it is necessary to build managerial strategies that stimulate the participation of the multiprofessional healthcare team in building a safety culture that guarantees a risk-free assistance.

Finally, we hope that this study stimulates reflection on the importance of hand hygiene and deployment of multimodal strategy, especially in oncological services. This study examined the professionals’ adherence to the HH, awakening to the need for other studies that seek to assess the potential barriers for large adhesion to the HH and coping with the problems related to healthcare-related infections.
Health professionals’ adhesion to... and implementation of front line ownership using a, rural, tertiary care hospital in central India as a model. BMC Health Serv Res. 2015 Apr 29;15:182. DOI:10.1186/s12913-015-0840-1


Health professionals' adhesion to...