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ORIGINAL ARTICLE

THE IMPORTANCE OF HAND HYGIENE IN THE CONTROL OF INFECTIONS IN HEALTH SERVICES

A IMPORTÂNCIA DA HIGIENIZAÇÃO DAS MÃOS NO CONTROLE DAS INFECÇÕES EM SERVIÇOS DE SAÚDE

LA IMPORTANCIA DE LA HIGIENE DE LAS MANOS EN EL CONTROL DE INFECCIONES EN SERVICIOS DE SALUD

Diego Dias de Araújo[1], Renê Ferreira da Silva Junior[2], Elaine Cristina Santos Alves[3], Ricardo Otávio Maia Gusmão[4], Écila Campos Mota[5]

ABSTRACT

Objective: to identify the number of colony forming units in the hands of members of the nursing team before and after washing them with soap and water and antiseptic. ***Method***: descriptive, cross-sectional study, with quantitative approach, carried out from the collection of sterile swabs from the hands of nurses and nursing students, before washing them with soap and water and after the use of antiseptic. The material was collected, the plates incubated at 37°C and, after 24 hours, analyzed. The Research Ethics Committee approved the research project, protocol 646/07. ***Results***: using soap and water can reduce the microbial population present in the hands by up to 88.7% and applying antiseptic products, especially alcohol based agents, can intensify the microbial reduction in up to 97%. ***Conclusion:*** Hand hygiene is of paramount importance to prevent and control infections in health services. ***Descriptors*:** Hand Washing; Infection Control; Health Education.

RESUMO

Objetivo: identificar a quantidade de unidades formadoras de colônias das mãos de componentes da equipe de enfermagem antes e após de lavá-las com água e sabão e antisséptico. ***Método***: estudo descritivo, transversal de abordagem quantitativa, realizado a partir da coleta de swabs esterilizados das mãos de enfermeiros e acadêmicos de enfermagem, antes de lavá-las, ao lavá-las com água e sabão e após utilização de antisséptico. O material foi coletado, as placas incubadas a 37°C e após 24 horas analisadas. O projeto de pesquisa teve a aprovação do Comitê de Ética em Pesquisa, protocolo 646/07. ***Resultados***: a utilização de água e sabão pode reduzir a população microbiana presente nas mãos em até 88,7% e a aplicação de produtos antissépticos, em especial de agentes com base alcoólica, pode intensificar a redução microbiana em até 97%. ***Conclusão:*** A higienização das mãos é de suma importância na prevenção e controle das infecções em serviços de saúde. ***Descritores***: Lavagem das Mãos; Controle de Infecções; Educação em Saúde.

RESUMEN

Objetivo: identificar el número de unidades formadoras de colonias de las manos de los miembros del personal de enfermería antes y después de lavarlas con agua y jabón y antiséptico. ***Método***: estudio descriptivo, transversal, con un enfoque cuantitativo, realizado a partir de la recogida de los hisopos esterilizados de las manos de los enfermeros y estudiantes de enfermería antes de lavarlas con agua y jabón y después de usar un antiséptico. El material fue recogido, las placas, incubadas a 37°C y, después de 24 horas, analizadas. El proyecto de investigación fue aprobado por el Comité Ético de Investigación, protocolo 646/07. ***Resultados***: el uso de agua y jabón puede reducir la población microbiana presente en las manos a 88,7% y la aplicación de producto antiséptico, en particular agente basado en alcohol, puede aumentar la reducción microbiana de hasta 97%. ***Conclusión:*** La higiene de manos es de suma importancia en la prevención y control de infecciones en los servicios de salud. ***Descriptores*:** Lavado de Manos; Control de la Infección; Educación para la Salud.

[1]Nurse, PhD Student, Nursing School, Federal University of Minas Gerais/UFMG. Belo Horizonte (MG), Brazil. MSc Professor, State University of Montes Claros/UNIMONTES. Montes Claros (MG), Brazil. diego.dias1508@gmail.com; [2]Nurse, MSc Student in Health Teaching, Federal University of Vales do Mucuri e Jequitinhonha. United Colleges of Northern Minas Gerais. Diamantina (MG), Brazil. E-mail: renejunior_deny@hotmail.com; [3]Nurse, MSc in Nursing, Department of Nursing, State University of Montes Claros. Montes Claros (MG), Brazil. E-mail: elainecristinaenf@hotmail.com; [4]Nurse, MSc in Psychoanalysis, Department of Nursing, State University of Montes Claros. Montes Claros (MG), Brazil. E-mail: ricardotavio@ig.com.br; [5]Nurse, PhD Student, Nursing School, Federal University of Minas Gerais/UFMG. Belo Horizonte (MG), Brazil. MSc Professor, Federal Institute of Education, Science and Technology of Nothern Minas Gerais. Araçuai (MG), E-mail: ecilacampos@hotmail.com

INTRODUCTION

Infections are as old as the origin of health units. Despite the improvement of methods for the treatment and prophylaxis of infections, they remain the most frequent cause of human diseases and, even in countries with advanced health care systems, infections are an important cause of death.[1]

Infections can produce particularly devastating effects on the health care system, when combined factors leave patients susceptible to them. Infection control involves applying asepsis principles and infection prevention techniques at various points of patient care.[2]

The hands of healthcare professionals serve as the main vehicle of cross-infection at the hospital environment and other health care sites. The hands act as conductors for the transfer of almost all pathogenic microorganisms that circulate among patients and health professionals. Hand washing should be a practice incorporated in all levels of health care, aiming at the control and reduction of the indices of infections.[3]

It is noteworthy that here are several resources, articles and objects in use in health care that can undoubtedly have their surfaces contaminated with microorganisms of epidemiological relevance.[4]

Hand hygiene is considered the most important isolated action in the control of infections in health services, but, despite the efforts made by health professionals to adhere to that technique, lack of adherence is a reality verified over the years, and the object of studies in various parts of the world.[5-6]

The theme "hand hygiene in the control of infections in health service" has been discussed and analyzed. Currently, the great challenge is the adhesion of health professionals to the technique of hand washing.

"Hygiene demands time", sometimes the professional is so overwhelmed by work, not performing the action of hand hygiene, going directly to the care action, which is seen as the most important. That situation becomes worse when the professional has to go from his/her work area to find, for example, a washbasin.[3]

The simple use of soap and water can reduce the microbial population present in the hands and, in most cases, interrupt the chain of transmission of diseases. The application of antiseptic products, especially alcohol-based agents, can further reduce risk of transmission, by intensifying the microbial reduction or by favoring an increase in the frequency of hand hygiene.[7]

The use of an antiseptic associated with hand washing further reduces the risk of transmission of transiently acquired microorganisms. Those procedures are also effective and inexpensive, in addition to being of great value in the control of infections.[1]

For the health professionals, and especially for the nursing team, who is, most of the time, in contact with the patients, the adhesion and correct accomplishment of the technique of hand hygiene is a measure of paramount importance and should be performed before and after contact with the patient.[8] In this context, the present study seeks to:

- Identify the amount of colony forming units from the hands of members of the nursing team before and after washing them with soap and water and antiseptic.

METHOD

A descriptive, cross-sectional study with a quantitative approach performed with four nurses and six nursing students, randomly selected.

The referred scenario of the study was a public hospital located in the municipality of Montes Claros/MG. The service is used as an internship field for nursing students from a teaching institution located in the same municipality. Therefore, this study is of great importance, because, while still in internship, students can understand the real need for adherence to the technique of hand hygiene.

In order to evaluate the applicability of the data collection method and to avoid possible errors during the development of the study, a pre-test was performed with undergraduate nursing students from another private institution.

Petri plates containing agar standard methods (PCA), sterile swabs, sterilized saline tubes and retro projector pen were used for data collection. The procedure was performed by selecting three Petri plates containing PCA, for each participant of the study, and, with the retro-projector pen, the initials of the name of the professionals and the students were identified, enumerated according to the phases of the collection. In the first phase, the swab was moistened in saline solution and, soon after, wiped on the skin of the palm of one of the hands without washing. Later, the material was seeded with the swab in the first plate.

In the next phase, the swab was moistened in saline solution and wiped on the skin of the

palm of one hand, after simple washing with soap and water. In the last phase, the smear was performed on the hand after antiseptic rubbing with 70% alcohol (70% glycerinated alcohol, alcohol gel) and seeded on the third culture plate. After collecting the material for analysis, the plates were incubated at 37°C and, after 24 h, analyzed.

The data were analyzed, from the counting of Colony Forming Units (CFU), that is, units of microbial colonies visible to the naked eye, found in the culture plates. In order to facilitate the visualization and counting of the CFUs, they were marked with the retro-projector pen and, after counting, the data were transcribed by tabulation.

The precepts of bioethics were respected according to Resolution 466/20129 of the National Health Council that deals with research with human beings. The project was referred to the Research Ethics Committee (COEP) of the State University of Montes Claros (Unimontes) and obtained a favorable opinion under protocol number 646/07.

RESULTS AND DISCUSSION

The results of the structured observation showed the effectiveness in the basic hand hygiene procedure by nurses and nursing academics, which, when not performed, represents an important source of dissemination of nosocomial infections.

When discussing microbial growth, it refers to the number rather than size of cells, "growing" microorganisms are actually increasing in number and accumulating in colonies (clusters of cells that can be viewed without use of microscope).[10]

Tables 1 and 2 show a remarkable reduction in the number of CFUs from the hands of nurses and nursing students. The use of soap and water reduced the microbial population present in the hands in 88.2% and the application of the antiseptic product intensified the microbial reduction in 97%.

Table 1. Number and Percentage of Reduction of Colony-forming units from the Nurses' Hands from NASPI (CFU/hand*) – Montes Claros – MG – 2007

Nurses	Before washing the hands N (%)	After washing the hands with water and soap N (%)	After using the antiseptic N (%)	Total reduction (%)
A	283 (100%)	85 (70%)	31 (63.50%)	89%
B	145 (100%)	80 (44.80%)	13 (83.75%)	91%
C	1,160 (100%)	250 (78.45%)	140 (44%)	88%
D	952 (100%)	142 (85.10%)	29 (79.6%)	97%

*Colony forming units/hand

Table 2. Number and Percentage of Reduction of Colony-forming Units from the Hands of Nursing Students (CFU/hand *) – Montes Claros – MG – 2007

Nursing Students	Before washing the hands N (%)	After washing the hands with water and soap N (%)	After using the antiseptic N (%)	Total reduction (%)
A	78 (100%)	42 (46.20%)	33 (21.40%)	57.70%
B	133 (100%)	61 (54.10%)	43 (29.50%)	67.65%
C	1,912 (100%)	225 (88.20%)	71 (68.45%)	96.30%
D	196 (100%)	90 (54.10%)	23 (74.45%)	88.30%
E	51 (100%)	43 (15.70%)	16 (62.80%)	68.60%
F	80 (100%)	34 (57.50%)	27 (20.60%)	66.25%

* Colony forming units/hand

Despite being a simple procedure, hand hygiene is recognized as the most important prevention measure in the control of infections in health services, and it has been stimulated in health services.

There is a consensus in the literature about the importance of adherence to hand hygiene by the health professional, since it constitutes a simple procedure to reduce transient hand microbiota, acting as a method to prevent infection in health services, considerably reducing the occurrence of cases.[1-2,7,11]

The simple use of soap and water can reduce the microbial population present in the hands and, in most cases, interrupt the chain of transmission of diseases. The simple

act of washing hands with soap and water aims at the removal of bacteria, desquamative cells, sweat, dirt and oiliness of the skin, thus removing most of the microorganisms from the transient flora.[7-8,10,12]

Hand washing is the most efficient and economical way to prevent nosocomial infections, a fact globally recognized. Hands are the main means of transmission of nosocomial infections and one should wash his/her hands whenever they are visibly dirty, before and after any procedure used in patient care, particularly with those immunologically compromised and after taking off the gloves.[13]

It is noteworthy that the effectiveness of hand hygiene depends on the length of the procedure, the technique used, and the resources available for its execution; in fact, it is not possible to establish absolute rules, and the need for handwashing should be assessed individually for each circumstance.[3]

With the consequent removal of various substances and microbial reduction present in the hands by handwashing, the results demonstrate the efficacy of the procedure; although simple, it is able to reduce the spread of infections in health services.

The data also show a consequent decrease in the number of CFUs after the application of the antiseptic product (70% glycerin alcohol, alcohol gel), which reduces the risk of disease transmission even further, due to the higher intensity of those products in microbial reduction or even to favor an increase in the frequency of hand hygiene. Antiseptic substances are applied to the skin, remove and prevent the growth of microorganisms from the transient and resident flora.[1-2,5]

Antisepsis is effective only when the hands are free of contamination with organic fluids, protein material or dirt, the antimicrobial activity of the alcohol is attributed to the ability to denature proteins, alcoholic solutions containing 60% to 90% of alcohol are more effective and higher concentrations are less potent because the proteins are not easy to denature in the absence of water.[6,11]

Hand hygiene is recognized as the way to reduce the incidence of infections, educational programs show benefits in reducing the incidence of diseases due to improved hygiene practices, although hand washing is a simple procedure, it requires changes of habit, thus, there is a distance between the knowledge of hand washing and its practice.[1]

Despite the epidemiological importance of hand hygiene to prevent infections, adherence to this measure has been one of the greatest challenges. One believes that the awareness strategy is a way of promoting behavioral changes[8]; however, with the reality of increased health care expenses and costs, resulting from a large range of factors, the rational use of material resources appears as an urgency in the context of the survival of health services.[14]

FINAL THOUGHTS

Using soap and water can reduce the microbial population of hands up to 88.2% and applying antiseptic products, especially alcoholic based agents, can intensify the microbial reduction by up to 97%. Although the sample of this research had limitations, the results indicate the need for greater care, attention and adherence by health professionals, especially the nursing team to the technique of hand hygiene.

One suggests that health institutions invest in training programs, aiming at the promotion and awareness to the practice of hand hygiene through continuing education. This study also brings the understanding of the need to perfectly instruct the technique of hand hygiene since the college in the various courses in health field, raising awareness during their training regarding the importance of such procedure to reduce the incidence of infections in health services.

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Corresponding Address

Renê Ferreira da Silva Junior
Rua Urbino Viana, 25 B
Bairro Morrinhos
CEP 39400-000 – Montes Claros (MG), Brazil