



## THE USE OF GLOVES BY NURSING STAFF: TRANSMISSION RISK PROTECTION O USO DE LUVAS PELA EQUIPE DE ENFERMAGEM: DA PROTEÇÃO AO RISCO DE TRANSMISSÃO

### EL USO DE GUANTES POR PERSONAL DE ENFERMERÍA: PROTECCIÓN DE RIESGO DE TRANSMISIÓN

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#### ABSTRACT

**Objective:** to evaluate the use of gloves by nursing staff in hospital of small businesses. **Method:** descriptive-exploratory study, quantitative, through systematic observation of routine activities of 33 professionals and application of individual questionnaire. The data were analyzed by simple statistics, with frequency and percentage, presented in tables and Images. The project was approved by the Research Ethics Committee, Protocol n° 038/2011. **Results:** dressings, diaper change, contempt of diuresis, sponge bath (all with 100%) and venipuncture (98.8%) were the procedures with greater adherence to the use of gloves, unlike subcutaneous and intramuscular Drug Administration (26.9%). In 35.8% of measurements of vital signs was the unnecessary use of gloves. The rush (51.5%) was related to non-adherence by the professionals. **Conclusion:** Need educational and organizational interventions that facilitate the process of team work, contributing to the increase of membership and correct use of gloves. **Descriptors:** Protective Gloves; Nosocomial Infection; Nursing Staff.

#### RESUMO

**Objetivo:** avaliar o uso de luvas pela equipe de enfermagem em hospital de pequeno porte. **Método:** estudo descritivo-exploratório, quantitativo, por meio de observação sistematizada de atividades rotineiras de 33 profissionais e aplicação de questionário individual. Os dados foram analisados pela estatística simples, com frequência e percentual, apresentados em tabelas e Imagens. O projeto foi aprovado pelo Comitê de Ética em Pesquisa, Protocolo n° 038/2011. **Resultados:** curativos, troca de fralda, desprezo de diurese, banho no leito (todos com 100%) e punção venosa (98,8%) foram os procedimentos com maior adesão ao uso de luvas, diferente da administração medicamentosa subcutânea e intramuscular (26,9%). Em 35,8% das aferições de sinais vitais houve o uso desnecessário de luvas. A pressa (51,5%) foi relacionada a não adesão pelos profissionais. **Conclusão:** Necessitam-se intervenções educacionais e organizacionais que facilitem o processo de trabalho da equipe, contribuindo para o aumento da adesão e uso correto de luvas. **Descritores:** Luvas Protetoras; Infecção Hospitalar; Equipe de Enfermagem.

#### RESUMEN

**Objetivo:** evaluar el uso de guantes por personal en el hospital de pequeños negocios de enfermería. **Método:** estudio descriptivo-exploratorio, cuantitativa, a través de la observación sistemática de las actividades rutinarias de 33 profesionales y aplicación de cuestionario individual. Los datos fueron analizados por simple estadística, con frecuencia y porcentaje, presentados en tablas e Imágenes. El proyecto fue aprobado por el Comité de ética de la investigación, Protocolo n° 038/2011. **Resultados:** del pañal apósitos, cambio, desprejo de la diuresis, esponja de baño (con 100%) y venopunción (98.8%) eran los procedimientos con una mayor adherencia al uso de guantes, a diferencia de la administración de droga subcutánea e intramuscular (26,9%). En 35,8% de las mediciones de los signos vitales fue innecesario el uso de guantes. La fiebre (51,5%) estaba relacionada con el incumplimiento por los profesionales. **Conclusión:** Necesita las intervenciones educativas y organizacionales que faciliten el proceso de trabajo en equipo, contribuyendo al aumento de la membresía y el uso correcto de guantes. **Descriptores:** Guantes de Protección; Infección Nosocomial; El Personal de Enfermería.

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## INTRODUCTION

The use of gloves by health team is a practice with dual purpose. On the one hand aims to protect the health of professionals by reducing the direct contact of the hands of those with blood or body fluids, unhealthy skin, potentially contaminated materials and patients infected with pathogens transmitted through contact.<sup>1</sup> on the other hand, have a view to the safety of that patient, avoiding contamination of sterile tissue or cross-infection.<sup>1-2</sup>

Combined with hand hygiene, glove use, such as personal protective equipment (PPE), an important preventive factor of transmission of microorganisms from the hands<sup>2</sup>, and together constitute the basis of standard precautions (PP).<sup>1</sup>

We use the term EPI to refer to barriers used-whether individually or together-to protect mucous membranes, skin, Airways and clothes from contact with infectious microorganisms.<sup>1</sup>

Membership on the part of professionals the use of gloves has been a frequent object of research.<sup>3-5 6</sup> Study performed in a small hospital in the interior of Sao Paulo showed that adherence to 84.4% occurred in gloves of venous puncture and 82.8% of intravenous medication administrations, demonstrating that this practice has not yet been fully incorporated into the routine of health professionals.

Adherence to the use of gloves by nursing professionals also was not fully satisfactory in primary health care, and in a study conducted in the same region in family health units, the gloves were used only 23.7 percent of the time in intravenous medication administration and 30% in capillary blood glucose testing.<sup>7</sup> In home care, the indexes were also below expectations, particularly in the realization of capillary blood glucose test with only 14%.<sup>8</sup> However, in both studies above, was also the inappropriate use of gloves, where with the same glove and, therefore also without sanitizing hands, blood was collected from several patients<sup>7</sup> and on maintenance of gloves already used for holding bandages to do other procedures, including physical examination in patients with healthy skin.<sup>8</sup>

It is known that the non-rational use of gloves may cause cross-infection, decrease the frequency of cleansing of hands, besides generating false sense of security to the professional and unnecessary costs.<sup>9-10</sup>

<sup>11</sup> study conducted within the Mato Grosso do Sul State shows that there is no consensus

as to the indication of the use and the type of gloves among nursing professionals investigated, to be used in different situations. The researchers continue stating that such questions contribute to improper use thereof, which can pose a threat both to patients regarding the professional himself.

Given the serious consequences generated both by the absence of the use of gloves as by its improper use, such a study aiming to assess the use of gloves by nursing staff in hospital of small businesses.

It is expected to contribute to the advancement of scientific knowledge in theme, identifying the vision of professionals on the topic and inappropriate situations of its use in healthcare practice.

## METHOD

Descriptive and exploratory character study of a quantitative approach held in a teaching Hospital of São Paulo/SP, Brazil, Southeast of the period from September to December 2011, in emergency units, adult and pediatric clinics hospitalizations.

Participated in the study 33 (100%) professional nursing staff, being eight (24.2%) nurses, with an average age of 25 years and 32.6 (75.8%) nursing technicians, with an average age of 36.8 years. The average time of training for nurses is 9.9 years and working at the institution for three years, and among the nursing technicians is 10.9 years of training and two and a half years of activity in the service studied.

Data collection was carried out in two stages, the first being composed of 144 hours of systematic observation of the routine activities of professionals, identifying opportunities for the use of gloves and the use or not of these, from a *check-list*, in three shifts (morning, afternoon and night). The second step was accomplished through application of individual nursing professional's questionnaire featuring the knowledge and opinion of these on the topic. The questionnaire, composed of five multiple choice questions, addressing aspects of supply of gloves, barriers to the use of gloves, situations which should make use of gloves and as you can see your own adherence to the use of gloves, has been validated previously by two nurses in Infection control experts.

The data were analyzed by simple statistics, with frequency and percentages, presented in tables and Images.

This study was approved by the Research Ethics Committee (CEP) of the Centro Universitário Central Paulista (UNICEP) N°

038/2011, and followed the resolution 196/96 of the National Health Council.

RESULTS

In step of evaluation of the institution, of the 144 hours of observation carried out in 36 (100%) days just in one day (2.8%) to

infrastructure for glove use was not deemed appropriate due to the unavailability of gloves in various sizes.

Since the accession of the nursing team professionals the use of gloves, in procedures in which their use is necessary, is shown in Table 1.

Table 1. Accession of nursing staff of a small hospital to glove use in procedures that require its use, according to systematic observation. São Carlos, SP - 2012.

|                                             |  | Use of gloves |      |     |      |
|---------------------------------------------|--|---------------|------|-----|------|
|                                             |  | Yes           |      | No  |      |
|                                             |  | N             | %    | N   | %    |
| Capillary blood glucose                     |  | 15            | 60.0 | 10  | 40.0 |
| Venous network handling                     |  | 28            | 40.0 | 42  | 60.0 |
| Removal of peripheral venous access         |  | 28            | 80.0 | 07  | 20.0 |
| Venipuncture                                |  | 81            | 98.8 | 01  | 1.2  |
| Drug Administration (subcutaneous/muscular) |  | 14            | 26.9 | 38  | 73.1 |
| Bandage                                     |  | 11            | 100  | 00  | 00.0 |
| Diaper Exchange                             |  | 19            | 100  | 00  | 00.0 |
| Contempt of diuresis                        |  | 13            | 100  | 00  | 00.0 |
| Bed linen Exchange                          |  | 15            | 71.4 | 06  | 28.6 |
| Sponge bath                                 |  | 7             | 100  | 00  | 00.0 |
| Total                                       |  | 231           | 69   | 104 | 231  |

It was observed that there was unnecessary use of gloves on several occasions, according to Table 2.

Table 2. Unnecessary use of gloves by nursing staff of a small hospital, according to systematic observation- São Carlos, SP-2012.

|                                    | Use of gloves |      |
|------------------------------------|---------------|------|
|                                    | N             | %    |
| Measurement of vital signs         | 44            | 35.8 |
| Mobilization of the patient        | 6             | 33.3 |
| Change of serum bottle/medication  | 8             | 22.9 |
| Physical examination               | 1             | 8.3  |
| Electrocardiogram                  | 1             | 11.1 |
| Inhalation                         | 6             | 28.6 |
| Oral feeding                       | 4             | 80   |
| Drug Administration VO             | 1             | 3.7  |
| Handling SNE (away from the probe) | 5             | 27.8 |
| Total                              | 76            | 28.4 |

It was also noticed the use of gloves so wrong in some cases, such as, for example, using the same glove on more than one

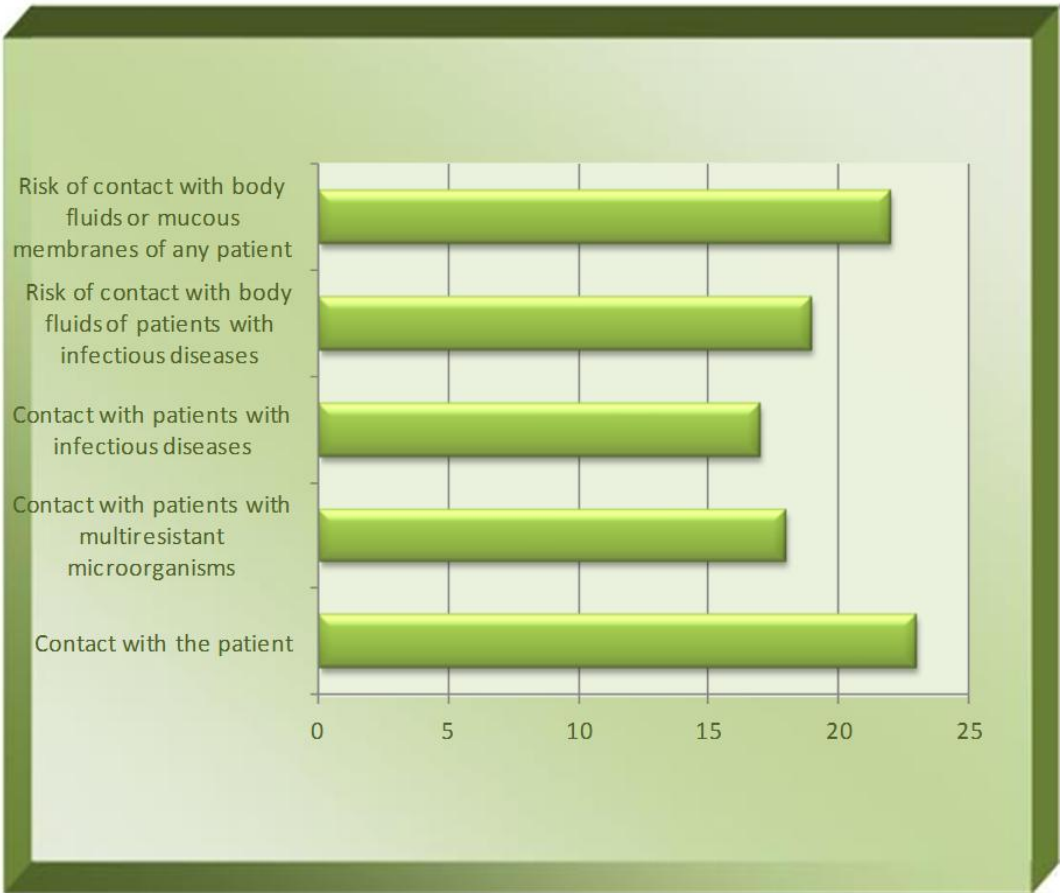
patient and/or manipulation of different sites from the same patient or surfaces off the bed with the same glove (table 3).

**Table 3.** Distribution of the misuse of gloves by nursing professionals of a small hospital, according to systematic observation-São Carlos, SP-2012.

|                                   | Use the same glove in more than one activity |      | Touched surfaces out of bed with the glove |      |
|-----------------------------------|----------------------------------------------|------|--------------------------------------------|------|
|                                   | N                                            | %    | N                                          | %    |
| Vital signs                       | 26                                           | 59.1 | 1                                          | 2.3  |
| Mobilization of the patient       | 0                                            | 0    | 1                                          | 16.7 |
| Capillary blood glucose           | 1                                            | 6.7  | 0                                          | 0    |
| Venous network handling           | 6                                            | 21.4 | 0                                          | 0    |
| Change of serum bottle/medication | 5                                            | 62.5 | 0                                          | 0    |
| Removal of venous access          | 2                                            | 7.1  | 0                                          | 0    |
| Venipuncture                      | 0                                            | 0    | 1                                          | 1.2  |
| Drug Administration SC/IM         | 4                                            | 28.6 | 0                                          | 0    |
| Bandage                           | 0                                            | 0    | 3                                          | 27.3 |
| Manipulation of SNE               | 1                                            | 20   | 1                                          | 20   |
| Diaper Exchange                   | 0                                            | 0    | 2                                          | 10.5 |
| Contempt of diuresis              | 2                                            | 15.4 | 2                                          | 15.4 |
| Bed linen Exchange                | 0                                            | 0    | 2                                          | 13.3 |
| Inhalation                        | 4                                            | 66.7 | 0                                          | 0    |
| Drug Administration VO            | 0                                            | 0    | 1                                          | 100  |
| Total                             | 51                                           | 16.1 | 14                                         | 4.4  |

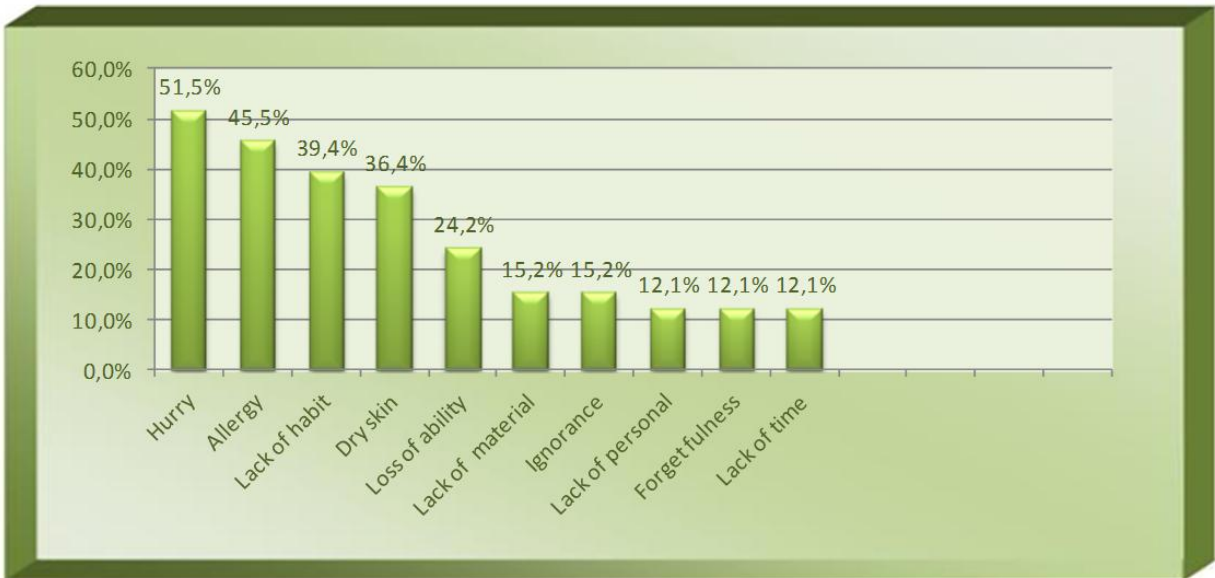
Not part of the scope of this work to evaluate the adherence to hand hygiene. In step of characterization of knowledge and opinion of professionals about glove use was considered satisfactory by 100% of

respondents the amount of available both sterile gloves as procedure, at the institution. The opinion of professionals about in what situations should use gloves is presented in Image 1.



**Figure 1.** Distribution of answers from professionals from nursing staff, a small hospital, about the situations that require use of gloves. São Carlos, SP - 2012.

The aspects mentioned by the professionals that make adherence to the use of gloves are shown in Image 2.



**Figure 2.** Distribution of aspects that hinder the use of gloves, in the view of nursing professionals of a small hospital-São Carlos, SP-2012.

DISCUSSION

Protective gloves feature is unquestionable, however, its use requires prior assessment considering the nature of the procedure and the characteristics of the patient, so that they are used rationally.<sup>10-1</sup> the indiscriminate use of these raises costs by health service, largest Latex-related sensitization and increases the risk of cross-infection between patients, since this situation tends to be coupled with the low adhesion to the hygiene of the hands.<sup>2.10</sup>

Thus, the gloves must be used rationally and conscious, only for situations in which are really necessary: risk of contact with blood and bodily fluids (excluding sweat), in addition to mucous membranes and skin full of any patient.<sup>2.9</sup> conditions, which in principle do not include the realization of vital signs and mobilization of the patient, as evidenced in this study.

Valley alert that the gloves do not provide complete protection against contamination, justifying the requirement of sanitizing of hands before and after you put them on, since hand contamination can also occur due to minor defects or sleeve through the incorrect technique of removing the same.<sup>2.10</sup>

Although the importance of proper use of gloves is widely disseminated, inconsistencies are still found. This study highlights the low adherence to use of gloves in the administration of medications subcutaneously (SC) and intramuscular (IM) (26.9%), capillary blood glucose (40%) and manipulation of venous network (40%), corroborating with literature.<sup>3.11 -2</sup> glove use in administering medicines through SC and IM is controversial, being considered unnecessary by the World Health Organization.<sup>13</sup> the Regional Council of nursing-SP, in turn, declares that the gloves should be used in administering medicines

when the via use associated with the clinical conditions of the patient, can expose the professional body fluids.<sup>14</sup> this lack of clarity on the recommendations contributes to the non-uniformity of conduct in administering medication IM and SC.

The implementation of institutional protocols standardize the process of administration of medicines is essential for professionals to act in a safe manner to avoid risks and damage to themselves and to the patient.<sup>14</sup>It should be noted in this study the high membership fee (98.8%) observed the use of gloves in performing venipuncture, unlike reported in previous studies.<sup>6-7.15</sup> this may indicate an increase in the incorporation of the use of gloves on a daily basis of teams. This was also appropriate (100%) for hygiene-related procedures: sponge bath, disposal of diuresis and diaper change, these data similar to that found by other authors.<sup>3.11</sup>

Regarding the use of gloves in the realization of dressings, there is controversy about the choice between sterile and non-sterile glove, i.e. use of clean or aseptic technique, technique in hospital environment.<sup>3.11</sup> in the present study, in 100% of the dressings, which included ulcers and wounds, gloves were used, without the use of instruments.

In a microbiological examination of non-sterile gloves to open boxes and of collective use, not if found significant contamination. However, it should be noted that the storage location of the box, the local temperature, the degree of exposure the procedures and the time that the case remains open, are factors influencing contamination of gloves.<sup>16</sup>

Gloves, in addition to avoid contamination of the hands of the professionals with blood and other fluids, reduce the spread of micro-organisms to the environment and also to the patient. On the other hand, the misuse of

these can transfer microorganisms and/or secretions for surfaces touched off the bed of the patient, such as medical records, telephone, door handles, among others.<sup>2-3</sup>

Notes - If in this study, it was during the making of dressings that had the highest percentage of rings, with gloved hands, outer surfaces to the patient allowing the spread of pathogens. This was due to failures in the provision of the necessary material for completing the procedure, generating unnecessary offsets to get forgotten material, and in these cases, without prior removal of the gloves and the hygiene of the hands.

On inanimate surfaces such as beds, doorknobs, faucets, and computers have been found as pathogens *Enterococcus* resistant to Vancomycin, *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, *Clostridium difficile* and *Staphylococcus aureus* methicillin resistant, noting that the hospital environment is a potential reservoir of these microorganisms. The absence of visible soiling these areas contributes to effective action of cleaning and sanitizing hands are ignored.<sup>17</sup>

Indispensable in preventing cross-infection, the switch must always occur gloves before contact with the next patient; on change of contaminated body site to another clean in the same patient or when the gloves present damage. Need to be sidewalks immediately before running the procedure and withdrawn soon after the completion of this.<sup>2,9</sup>

However the replacement of gloves was not performed correctly in some situations observed, emphasizing the inhalation (66.7%), serum bottle Exchange/medication (62.5%) and checking for vital signs (59.1%), in which there were using the same glove on more than one patient.

Several are difficult factors found in the literature for adherence to the correct use of gloves. Among them are the loss of sensitivity and agility, discomfort, annoyance, oblivion, insufficient amount and disbelief as to its use.<sup>18-9</sup> the fear of putting the patient's life at risk due to the time taken for the placement of PPE is also touted as a deterrent to accession.<sup>20</sup>

In the present study, the rush (51.5%) was the most cited factor as detrimental to adhesion to the use of gloves, followed by allergy (45.5%) and lack of habit (39.4%).

The rush, often related to workloads, allows you to draw a parallel with another study<sup>4</sup>, which influences the adhesion to PP, positively, whose authors to associated with the perception of responsibility and concentration that triggers, workloads

favoring adherence to PP, therefore, contrary to what had been found in the present study, in which membership to the gloves and the rush were inversely proportional factors.

What stands out in this study, the availability and accessibility were not singled out as major factors difficult to glove use, different than found in other studies.<sup>19,21</sup>

To minimize the discomfort and interference in professional performance, the sleeve should be properly adjusted by hand.<sup>2</sup> to this end, it is essential that the institution offers the product in various sizes so that all professionals achieve their best performance.

By means of systematic observation, that in just one day of the 36 days of observations there was the unavailability of gloves in various sizes. This finding can justify the account of professionals in not pointing skill loss as more harmful factor to adherence to the use of gloves in this institution, unlike found by other authors.<sup>18,21</sup> the supply of gloves of adequate size at the hands of the professionals seem to contribute favorably to the incorporation of the use of same in everyday life of the team.

## CONCLUSION

The nursing staff of the institution examined has knowledge about the use of gloves, however, these are not fully incorporated into professional practice.

In General, the gloves are present in professional team routine, especially in the realization of bandages and vascular punctures. However, it was identified the improper use of the same, both in the use of gloves and unnecessary use of the same glove on more than one patient and/or manipulation of different sites from the same patient or surfaces off the bed.

The rush was the most cited factor by professionals as difficult the use of gloves. Such a situation may be related to workload and to analyze the reasons that triggers management situation and create strategies that minimize and improve the quality of care, and the need to create educational and organizational measures to enrich and facilitate the process of work of the nursing staff in order to increase the rates of adherence to PP and consequently measures the professional and patient safety.

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