

APPLICATION OF INTERVENTION BUNDLES IN A PORTUGUESE INTENSIVE CARE UNIT

APLICAÇÃO DE FEIXES DE INTERVENÇÃO NUMA UNIDADE DE TERAPIA INTENSIVA PORTUGUESA

APLICACIÓN DE VIGAS DE INTERVENCIÓN EN UNA UNIDAD PORTUGUESA DE CUIDADOS INTENSIVOS

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Objective: to identify the association between the application of Intervention Bundles and sociodemographic and professional characteristics of nurses in a Portuguese intensive care unit. **Method:** descriptive and cross-sectional study, with a sample of 44 nurses from a Portuguese Intensive Care Unit. A questionnaire was applied from May to June 2019 in the data collection. Treatment included descriptive and inferential statistics. **Results:** the majority of the sample did not perform audits (86.4%) regarding the infections under study. The score of the Intervention Bundle of Urinary Tract Infection and Pneumonia Associated with Intubation differed significantly between the genders (Student's T: $p < 0.047$ and $p < 0.037$), as well as between the total professional exercise and exercise time in the Intensive Care Unit, respectively (Student's T: $p < 0.001$ and $p < 0.026$). **Conclusion:** the application of the Intervention Bundles was associated with sociodemographic characteristics and time of professional practice of nurses from a Portuguese intensive care unit.

Descriptors: Infections. Infection Control. Nursing Audit. Critical Care. Nurses.

Objetivo: identificar a associação entre a aplicação de Feixes de Intervenção e características sociodemográficas e profissionais de enfermeiros em uma unidade de terapia intensiva portuguesa. Método: estudo descritivo e transversal, com amostra de 44 enfermeiros de uma Unidade de Terapia Intensiva Portuguesa. Na coleta de dados aplicou-se questionário de maio a junho de 2019. Tratamento incluiu estatística descritiva e inferencial. Resultados: a maioria da amostra não executava auditorias (86,4%) quanto às infecções em estudo. A pontuação do Feixe de Intervenção da Infecção do Trato Urinário e da Pneumonia Associada à Intubação diferiu significativamente entre os sexos (T de Student: $p < 0,047$ e $p < 0,037$), bem como entre o exercício profissional total e tempo de exercício na Unidade de Terapia Intensiva, respectivamente (T de Student: $p < 0,001$ e $p < 0,026$). Conclusão: a aplicação dos Feixes de Intervenção associou-se às características sociodemográficas e ao tempo de exercício profissional de enfermeiros de unidade de terapia intensiva portuguesa.

Descritores: Infecções. Controle de Infecções. Auditoria de Enfermagem. Cuidados Críticos. Enfermeiras e Enfermeiros.

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Objetivo: identificar la asociación entre la aplicación de Vigas de Intervención y las características sociodemográficas y los profesionales de enfermería en una unidad de cuidados intensivos portuguesa. Método: estudio descriptivo y transversal, con una muestra de 44 enfermeras de una Unidad de Cuidados Intensivos portuguesa. Se aplicó un cuestionario de mayo a junio de 2019 en la recolección de datos. El tratamiento incluyó estadísticas descriptivas e inferenciales. Resultados: la mayoría de la muestra no realizó auditorías (86,4%) respecto a las infecciones en estudio. La puntuación del Viga de Intervención de Infección urinaria y Neumonía Asociada a Intubación difirió significativamente entre los sexos (T de Student: $p < 0,047$ y $p < 0,037$), así como entre el ejercicio profesional total y el tiempo de ejercicio en la Unidad de Cuidados Intensivos, respectivamente (T de Student: $p < 0,001$ y $p < 0,026$). Conclusión: la aplicación de los Viga de Intervención se asoció con características sociodemográficas y tiempo de práctica profesional de las enfermeras de una unidad de cuidados intensivos portuguesa.

Descriptores: Infecciones. Control de Infecciones. Auditoría de enfermería. Cuidados Críticos. Enfermeras y Enfermeros.

Introduction

The provision of health care in hospitals can give rise to the transmission of Healthcare-Associated Infections (HAIs). If, on the one hand, the survival of patients is prolonged, on the other hand, the same patients become vulnerable to the multiple infections they can acquire in the places where care occurs, mainly due to the use of more invasive procedures, aggressive or immunosuppressive antibiotic therapy and subsequent hospitalizations, such as intensive care units (ICU).

In the last century there has been a significant increase in longevity, but the prolongation of life does not always occur with desirable quality. The periods spent in hospitalization are characteristic of a decrease in the body's defenses, that is, the defense mechanisms are nullified by the techniques of diagnosis, monitoring or therapy that depress or exceed them, generating conditions for the occurrence of infections⁽¹⁾.

HAIs can be defined as acquired infections after the patient's admission to a health unit. They manifest themselves during hospitalization or after discharge and are related to these two procedures. In a study conducted in Brazil, 28.3% of the patients had HAIs during the first month postoperatively⁽²⁾. In addition to the substantial increase in the morbidity of patients hospitalized in the hospital context, HAIs is one of the leading causes of death worldwide.

The use of central vascular catheters (CVC) is one of the most well-known risk factors related to HAIs. A CVC-related bloodstream infection occurs when the microorganism present at the

insertion site invades the bloodstream, triggering bacteremia, which can cause a sepsis, when not treated properly⁽³⁾. This contamination is the main cause of ICU infection. The authors of this study report that, in Europe, there are 13.3 infections per 1,000 catheters/day, adding that this infection is associated with an increase in hospitalization time between 10 and 20 days and at an approximate cost of US\$ 30,000 per patient⁽⁴⁾. Another study also mentions the increase in costs in health care⁽⁵⁾ and another report that, in the United States of America, the cost for an episode of infection ranged from US\$ 24,090 to US\$ 34,544 and in Europe between EUR 16,814 and EUR 29,909⁽⁶⁾.

Urinary Tract Infection (UTI) concerns the presence and multiplication of bacteria in the urinary tract, causing tissue damage from the urethra to the kidneys. These infections, common in hospitalized patients, are common worldwide and it is estimated that 150 million people are affected per year⁽⁷⁾. Among the HAIs, 40% are UTI, which have low mortality⁽⁸⁾. According to a study developed in Bahrain, UTI are the most common hospital infections worldwide. They are associated with increased mortality, morbidity, length of hospitalization and health costs, and urinary catheterization is the most important risk factor for its development⁽⁹⁾.

In the statement of the Program for the Prevention and Control of Infections and Antimicrobial Resistance⁽¹⁰⁾, although the prevalence of infection associated with CVC (57.1%) and Intubation-Associated Pneumonia

(IAP) (36.6%), in adult ICUs, between the years 2008-2016, has also been lowered and there has also been a reduction in the prevalence of HAIs in hospital settings to 7.8%, remaining high. As for IAP, a study conducted in Portugal reports that an intubated patient has a three to ten times higher risk of developing pneumonia compared to an unintubated patient. The IAP can reach 7 to 30% of people with invasive mechanical ventilation⁽¹¹⁾.

According to a European organization⁽¹²⁾, 8.3% of patients who remained hospitalized in the ICU for more than two days had infections, such as pneumonia, CVC infection and UTI. Of the patients hospitalized for more than two days in the ICU, 6% had: pneumonia, and 98% of the cases related to intubation (IAP); 4% had bloodstream infection, and 37% of cases were CVC-related; and 2% had UTI, and 98% of the cases were related to the presence of a urinary catheter.

In this regard, authors⁽¹³⁾ emphasize that the most frequent infections are IAP, CVC and UTI, besides indicating Intervention Bundles (IB) to be implemented in ICUs to prevent each of these infections. Other authors⁽¹⁴⁾ reinforce this understanding by mentioning that HAIs have an impact on the lives of patients, causing prolonged hospitalizations, increased morbidity and mortality, resulting in a significant increase in costs for both health systems and society. They add that IB were implemented to improve clinical practices and prevent infection.

Over time, there has been an increasing number of interventions based on sets of measures aimed at a given objective (bundles or IB), applied in a coordinated way and systematically monitored using checklists, involving the training of the professionals involved. This approach has had positive results, resulting in the reduction of infections. As a cohesive set of measures, they must be implemented together to achieve success, and must be the focus of audit.

The General-Head for Health⁽¹⁾ also recommends that, in the implementation of IB, there should be special attention to the multidisciplinary, aggregating and motivational

character of the work team. This team should be able to monitor the results of the application of IB, in particular the support of professionals to the implementation of IB measures, with a view to improving indicators. This type of approach aims to reduce the incidence of target infections in hospitalized patients. According to the Portuguese health organization⁽¹⁵⁾, the audit is a systematic, independent and documented process to obtain objective evidence and its objective evaluation, in order to determine to what extent the audit criteria are met, and may contribute to the application of these IB.

Given the case of the impact that HAIs rates have on intensive care services and health organizations in general, there is interest in studying the factors that may be associated with the application of IB by nurses, in the context of an ICU, with regard to infection prevention. In this sense, the aim of this study is to identify the association between the application of IB and sociodemographic characteristics and nursing professionals in a Portuguese ICU.

Method

This is a descriptive and cross-sectional study⁽¹⁶⁾. The target population of this study consisted of about 58 nurses, who performed functions in the ICU of a Hospital Center in the North of Portugal in three services: The Multipurpose Intensive Care Unit of the Emergency Service (MICUES) – 11 nurses; Multipurpose Intensive Care Unit (MICU) – 17 nurses; and Cardiology Intensive Care Unit (CICU) – 30 nurses. Inclusion criteria were: nurses who performed their professional activity in the ICU of the Hospital Center of the Northern Region of Portugal; nurses who were in the area of care delivery. Exclusion criteria were: nurses who were absent from the service during the data collection period; nurses who were on sick leave during the data collection period. The sample consisted of 44 nurses (about 75.9% of the population) who were present at the time of data collection. Of these, 11 belonged to the MICUES (100% of the population), 17 to the

MICU (100% of the population) and 16 to the CICU (53.3%) of the population.

Data collection was done through the application of a self-completed questionnaire consisting of five parts: the first part for sociodemographic characterization; the second, profile experience and vocational training; the third, reasons relating to prevention procedures; the fourth, consisting of scales relating to the three IB constructed by researchers; and the fifth and final, matters relating to the conduct of audits. After being granted authorization by the administration of the Hospital Center of the Northern Region of Portugal, for the study (Opinion N. 15/2019, of April 1, 2019), a date was scheduled for the collection of information, which took place between May and June 2019. For the application of the questionnaire, the Head Nurses were asked to collaborate, being informed about the study objectives and procedures involved. They assumed the task of informing their nursing team about the study and asked them to answer the questionnaire. Anonymity and confidentiality of information and voluntary participation were ensured. A questionnaire and an envelope (to be used in the return) were delivered to the nurses who voluntarily agreed to participate in the study. The Head Nurses of each service gathered the closed envelopes and their questionnaires and,

about 30 days after delivery, returned them to the investigators.

For data analysis and processing, a database was built in the computer software Statistical Package for the Social Sciences (SPSS), version 25.0. Next, descriptive statistics were used with calculation of absolute and relative frequencies for all variables and measures of central trend (Mean) and dispersion (Standard deviation) for the variables of measure level ratio. Parametric tests (Student's t and ANOVA) were applied at the intersection between the scales scores and the factors analyzed and, alternatively, when the assumptions for their use were not guaranteed, the Mann-Whitney and Kruskal-Wallis nonparametric tests were not guaranteed. The Shapiro-Wilk test was used to evaluate the normality of the distribution of variables ($p \geq 0.05$). The level of significance taken into account was 5%⁽¹⁷⁾.

Results

Most of the 44 nursing professionals in the sample were female, belonged to the age group of 38-50 years, had the married marital status and licentiate degree (Table 1). The mean age was 38.93 ± 5.470 years; minimum of 26 years, and a maximum of 50 years (data not shown in the table).

Table 1 – Sociodemographic characterization of the sample. Penafiel, Portugal – 2019. (N=44)

Variables	Absolute frequency	Relative frequency (%)
Gender		
Male	12	27.3
Female	32	72.7
Age group		
26-37 years	18	40.9
38-50 years	25	56.8
Unanswered	1	2.3
Marital status		
Married	31	70.5
Single	10	22.7
Divorced	3	6.8
Degree		
Licentiate	42	95.5
Master's	2	4.5

Source: Created by the authors.

The sample of nurses in this study was predominantly within the range of 16-30 years of professional experience and had between 9-20 years of professional practice in the ICU; the

largest group of nurses had a specialty and, of these, the majority were in the area of specialty of medical-surgical (Table 2).

Table 2 – Characterization of the experience and vocational training of sample nurses. Penafiel, Portugal – 2019. (N=44)

Variables	Absolute frequency	Relative frequency (%)
Time of professional experience		
3-15 years	17	38.6
16-30 years	27	61.4
Time Working in the Intensive Care Unit		
1-8 years	18	40.9
9-20 years	26	59.1
Education		
Post-Graduation	6	13.6
Specialty	11	25.0
Both trainings	9	20.5
Unanswered	18	40.9
Specialty (N=20)		
Community	2	10.0
Medical-Surgical	10	50.0
Rehabilitation	7	35.0
Maternal and Obstetric Health	1	5.0

Source: Created by the authors.

Regarding prevention procedures, most nurses used gloves in the care provision (61.4%) and considered that the use of gloves prevents infection of the patient and the health professional (79.5%). The entire sample considered that adequate hand hygiene prevents infections (100%) and the majority reported hand hygiene with SABA or soap and water (88.6%).

Regarding the audits related to the application of IB, in the case of UTI, CVC and IAP, respectively, most nurses pointed out that the service was audited (94.7%, 100%, 52.6%); regarding the frequency at which the monitoring of IB support was performed, the majority pointed out that it was performed at times (57.9%), and audits were carried out on computer support (73.1%).

Regarding the association between the application of IB and sociodemographic variables, the average IB score of the IB did not differ significantly among nurses with different age groups. The score of this IB differed among nurses of both genders, and female nurses obtained a higher average, when they reported having better procedures in this context.

The mean CVC IB score was not dissented among nurses of different genders and age groups.

The IB score of the IAP was significantly distinguished between nurses of both genders and age groups. Male nurses obtained a higher average, which means that they had better practices in this IB, as well as older nurses, who obtained a higher average than younger ones (Table 3).

Table 3 – Association between the application of intervention bundles and sociodemographic variables. Penafiel, Portugal – 2019. (N=44)

Variables	Categories	n	Mean±standard deviation	Test value	Degrees of freedom	Student's T test p
Intervention Bundle scale score Urinary tract infection x Gender	Male	12	7.17±2.125	t = -2.048	42	<0.047
	Female	32	8.84±2.516			

(continued)

Table 3 – Association between the application of intervention bundles and sociodemographic variables. Penafiel, Portugal – 2019. (N=44) (conclusion)

Variables	Categories	n	Mean±standard deviation	Test value	Degrees of freedom	Student's T test p
Intervention Bundle Score Urinary Tract Infection X Age Group	26-37 years	18	8.67±2.473	t = 0.696	41	≥0.490
	38-50 years	25	8.12±2.587			
Scale score of intervention Bundle central vascular catheter x gender	Male	12	13.25±4.003	t = 1.867	42	≥0.069
	Female	32	16.41±5.303			
Intervention Bundle Score Central Vascular Catheter x Age Group	26-37 years	18	16.56±5.793	t = 1.021	41	≥0.313
	38-50 years	25	14.92±4.699			
Scale of the intervention Bundle intubation-associated pneumonia x gender	Male	12	22.83±3.639	t = 2.156	42	<0.037
	Female	32	19.69±4.525			
Scale of the intervention Bundle intubation-associated pneumonia x age group	26-37 years	18	18.44±3.312	t = 2.982	41	<0.005
	38-50 years	25	22.24±4.603			

Source: Created by the authors.

Regarding the association between the application of IB and the variables of professional experience and professional training, the average IB score of the UTI did not differ among nurses with different times of professional experience, nor among nurses who had and did not have training. However, significant statistical differences were found between the mean score of this IB of nurses with different times of professional practice in the ICU. Nurses with fewer years of experience in the ICU had a higher average (9.39>7.69), meaning that their procedures were more adequate.

The average CVC IB score did not differ among nurses with different times of professional practice, as well as among nurses with different

times of professional practice in the ICU and different training conditions.

The same was true of the average of the IB score of the IAP, which did not differ between the group of nurses who had and the group that did not have training. The average of the IB score of the IAP was distinguished among the nurses who were included in the categories of working time; a higher average was obtained by those with more experience, that is, their procedure in that IB was more appropriate. It also occurred regarding the mean score of the IB of the IAP among the nurses included in the categories of time of professional experience in the ICU. Those with the most experience also had the highest average, which means a better procedure in this IB (Table 4).

Table 4 – Association between the application of intervention bundles and the variables professional experience and training. Penafiel, Portugal – 2019. (N=44) (continued)

Variables	Categories	n	Mean±standard deviation	Test value	Degrees of freedom	Student's T test p
Intervention Bundle scale rating Urinary tract infection x Professional exercise time	3-15 years	17	8.53±2.401	t=0.297	42	≥ 0.768
	16-30 years	27	8.30±2.614			
Intervention Bundle Scale Score Urinary Tract Infection x Exercise Time in Intensive Care Unit	1-8 years	18	9.39±2.146	t=2.316	42	<0.026
	9-20 years	26	7.69±2.542			

Table 4 – Association between the application of intervention bundles and the variables professional experience and training. Penafiel, Portugal – 2019. (N=44) (conclusion)

Variables	Categories	n	Mean±standard deviation	Test value	Degrees of freedom	Student's T test p
Intervention Bundle Score Urinary Tract Infection X Training	w/ training	18	8.89±2.763	t=1.404	42	≥ 0.274
	w/o training	26	8.04±2.306			
Intervention Bundle scale score Central vascular catheter x Professional exercise time	3-15 years	17	17.35±5.533	t=1.908	42	≥ 0.063
	16-30 years	27	14.41±4.618			
Intervention Bundle scale score Central vascular catheter x exercise time in the ICU	1-8 years	18	16.50±4.033	t=1.026	42	≥ 0.311
	9-20 years	26	14.88±5.764			
Intervention Bundle Score Central Vascular Catheter X Training	w/ training	18	14.56±5.249	t=-1.065	42	≥ 0.293
	w/o training	26	16.23±5.046			
Intervention Bundle scale pneumonia associated with intubation x Professional exercise time	3-15 years	17	17.82±3.167	t=-3.610	42	< 0.001
	16-30 years	27	22.26±4.390			
Intervention Bundle scale punctuation associated with intubation x exercise time in intensive care unit	1-8 years	18	18.61±3.071	t=-2.732	41.72	< 0.009
	9-20 years	26	21.88±4.869			
Intervention Bundle scale pneumonia associated with intubation x training	w/ training	17	20.28±5.062	t=0.326	42	≥ 0.746
	w/o training	27	20.73±4.143			

Source: Created by the authors.

Regarding the association between the application of IB and preventive procedures, the average if ordering IB of the UTI did not differ significantly among nurses with different procedures for wearing gloves (KW:p≥0.064).

The same was true in the case of the IB of the CVC, in which the mean ordering did not differ significantly among nurses with different procedures for wearing gloves (KW:p≥0.294). In the IB of the IAP, the mean ordering of the score of this bundle significantly disdained among nurses with different procedures for wearing gloves (KW:p<0.022). The nurses who always indicated to use the gloves had the highest mean of ordering (26.50>14.71), meaning that they had more appropriate procedures in this context.

Regarding the association between the IB score and the audit procedures, in the IB of the UTI, the average score ordering did not differ significantly among nurses with different conditions of auditing (Yes/No) (MW:p≥0.519).

The same happened in the case of the IB of the CVC, in which the average ordering of the score also did not differ significantly among nurses with different conditions of performance of these audits (MW:p≥0,345), as well as in the case of the IB, in which there were no statistically significant differences between the average ordering of the score of nurses with different procedures for applying audits (MW:p≥0,232).

Discussion

The majority of the sample of nurses was composed of female professionals. This result is in line with the statistical data published by the representative organization of nurses in Portugal⁽¹⁸⁾, in which it is observed that, in 2018, about 82.2% of the registered members were women. The female representativeness is very similar to that found in a study conducted in Braganza (Portugal)⁽¹⁹⁾, with a sample of 20 nurses,

in which the objective was to identify nursing procedures in patients submitted to invasive mechanical ventilation and the development of pneumonia, in an intensive care service, in which the majority of the sample belonged to females (75%).

Regarding the age group, most of the sample was in the range of 38-50 years, and this result was in accordance with the data published by the representative organization of nurses in Portugal⁽¹⁸⁾, in which the age group between 36 and 50 years represented the majority of nurses enrolled in this professional organization (35.7%), with the lowest percentage and the non-total correspondence of the age groups.

Regarding academic qualifications, in this study, the majority of the sample had licentiate, which is in line with the data published by the professional organization⁽¹⁸⁾, in which the largest number of nurses enrolled had licentiate (74.8%), and the results obtained in the study of Braganza (PT)⁽¹⁹⁾, in which the largest group (30%) also had licentiate.

The fact that the majority of nurses in the sample fall within the 16-30 years of professional experience (61.4%) and among 9-20 years of professional experience in the ICU (59.1%) indicate that have great professional experience, which is essential for a good practice of care⁽²⁰⁾.

More than half of the sample underwent training (Post-Graduations and Specializations), which demonstrates the concern of nurses in the search for professional training. This means that the work context itself is rich in continuous training experiences, generating opportunities to learn together with others, contributing to the training of students and professionals and, finally, to the quality of health care⁽²¹⁾.

Of the group of nurses who had postgraduate education, half had the medical-surgical specialty. This result corroborates what was obtained in a study⁽¹⁹⁾, in which the largest group (15%) had the specialty in Medical-Surgical Nursing, which was expected, since it was a study conducted in the context of ICU.

Most professionals did not have training in the area of Risk Management, Safety and

Infection Prevention (56.8%). Among those who had this training, most did not address the theme IF (63.1%) and reported that they felt the need to address it (80.0%). This need is understandable, if one takes into account what refers to the representative organization of nurses in Portugal⁽²²⁾, by saying that the need for training results from the individual experience, in relation to the training process.

The Program for Prevention and Control of Infections and Antimicrobial Resistance⁽¹⁰⁾ indicates that, in 2016, the monitoring of gloves wearing by health professionals obtained an overall quality index of 80.7%, a much higher percentage than that of the present study, meaning that there is still a need to insist that this behavior be consolidated in the practice of these nurses.

Concerning audits, a study conducted in Minas Gerais (Brazil)⁽²³⁾, on the evaluation of nursing records in hemotherapy of a general hospital, revealed that only 65.5% of the items evaluated in the prescriptions were in accordance, a percentage slightly higher than the execution of the monitoring of the number of IB in the present study, which exposes the difference between the technical guidelines and what is, in fact, implemented.

In the present study, there is an association between the application of the IB of the IAP and the time of professional practice and the time of exercise in the ICU. In these two cases, nurses with the highest professional experience (16-20 and 9-20 years of experience) had the most appropriate procedures in this area. These results can be explained using the statements of an author⁽²⁰⁾, who states that more time of professional practice demonstrates more competencies of nurses in their area of care delivery. However, there is an exception to this trend in the association between the application of IB in the UTI and the time of professional practice, in which it was the nurses with the shortest time of professional practice in the ICU (1-8 years) who reported having more appropriate procedures. This result may be due to the fact that, during graduation, the UTI theme

is deepened in several contexts, being a more widely used measure of infection, thus being more present in short professional experience.

There was also an association between the application of the IB of the IAP and the use of gloves by nurses, as a preventive procedure for infections, in which the nurses who reported wearing gloves reported more appropriate procedures. This may be known in DGS⁽²⁴⁾ recommendations for wearing gloves as a preventive procedure.

The main limitations of this study are the fact that it is a non-random sample, which restricted the safety of inference of the results to the population, since, because it was a convenience sampling, it affected the representativeness of the sample in the CICU.

This study may have implications in professional practice, in the area of Nursing of the Person in Critical Situation, since its realization and dissemination of results will sensitize nursing professionals to the importance of adopting these measures and the need for continuous training in the prevention and control of infections. In the short term, the organization of training in the different services, where the study was carried out and in other services of the same hospital center, on this theme, aiming at power players. The added value of this study was to have identified factors associated with the application of IB in ICU, which constituted something innovative in this geographical area and in this institution, and measures were proposed to mitigate the infections under study.

Conclusion

The analysis of the results and their discussion allows identifying, regarding the association between the application of IB by nurses of a Portuguese UTI and sociodemographic characteristics, concerning the application of the IB of the UTI, the sex factor and the application of the IB of the IAP, the sex factor and age group. When the association in question, between the application of the IB and professional experience and training, the emerging factors, were, in the

case of the IB of the UTI, the time of professional practice in the UTI and, with regard to the IB of the IAP, the time of global professional practice and in the UTI. Finally, with regard to the association between IB and preventive procedures, the only factor identified was the use of gloves in relation to the IB of the IAP. It should be noted that, in the application of the IB of the CVC, no factor associated with this infection has been identified.

It can be concluded that training in the area of Risk Management, Safety and Prevention of Infection reaches less than half of the sample and will have to be more offered by the responsible entities, so that it can cover all professionals.

The use of gloves in the provision of nursing care, in the procedures in which it is recommended, may not yet be fulfilled by all professionals, which may constitute a risk of the spread of HAIs. Given that audits of the procedures for implementing the IB of the UTI, CVC and IAP are not a general reality and their frequency is reduced, assuming that the generalization of this process to all IB, as well as the increase in its frequency, may constitute measures to be applied to minimize that gap and even to increase the application of the IB, ensuring the quality of the procedures.

Thus, the implementation of these strategies for health organizations is urgent. This objective depends not only on the directives and audit systems that are part of the organizational structure, but, above all, on health professionals who have the responsibility for the use of good practices, and the citizen can benefit from quality care.

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