



ORIGINALES

Impacting factors on nursing staff adherence and knowledge of standard precautions

Fatores impactantes na adesão e conhecimento da equipe de enfermagem às precauções-padrão

Factores impactantes en la adhesión y conocimiento del equipo de enfermería a las precauciones estándar

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ABSTRACT:

Assess adherence and knowledge to Standard Precautions (SP) and the impact of individual, work-related and organizational factors on the adherence of the nursing team to the aforementioned safety measures. Cross-sectional, correlational, descriptive study using the following instruments: socio-demographic questionnaire, Standard Precautions Adherence Questionnaire (SPAQ), SP Knowledge Questionnaire (SPKQ) and eight scales referring to an explanatory model of SP adherence. The final sample consisted of 172 professionals. The SPAQ obtained a mean of 71.94 points (SD = 6.40) and the SPKC, 15.44 (SD ± 1.48). Significant correlation ($p \leq 0.001$) between adherence and personality of risk, perception of risk, perception of obstacles to follow SP, training and availability of PPE was verified. We conclude that psychosocial and organizational factors were correlated with adherence. No statistical significance was found for the impact of knowledge on adherence to SP. However, it is necessary to raise awareness of the multifaceted nature of adherence to those referred to as security, which pervade individual but also organizational factors and therefore require direct and permanent involvement of management of health institutions, through education in health and infrastructure needed for safe behavior.

Key words: Universal Precautions; Health Knowledge, Attitudes, Practice; Nursing, Team.

RESUMO:

Avaliar a adesão e conhecimento às Precauções-padrão (PP) e o impacto de fatores individuais, relativos ao trabalho e organizacionais na adesão da equipe de enfermagem as referidas medidas de segurança.

Estudo transversal, correlacional, descritivo, por meio dos seguintes instrumentos: questionário sociodemográfico, Questionário de Adesão às PP (QAPP), Questionário de Conhecimento sobre as PP (QCPP) e oito escalas referentes a um modelo explicativo de adesão às PP. A amostra final constituiu-se de 172 profissionais. O QAPP obteve média de 71,94 pontos (DP = 6,40) e o QCPP, 15,44 (DP±1,48). Verificada correlação significativa ($p \leq 0,001$) entre a adesão e a personalidade de risco, percepção de risco, percepção de obstáculos para seguir as PP, treinamento e disponibilidade de EPI. Conclui-se os fatores psicossociais e organizacionais estiveram correlacionados à adesão. Não foi encontrada significância estatística do impacto do conhecimento na adesão às PP. No entanto, faz-se necessário a conscientização do caráter multifacetado da adesão às referidas de segurança, que perpassam fatores individuais, mas também organizacionais e que, portanto, necessitam de envolvimento direto e permanente da gestão das instituições de saúde, por meio de educação em saúde e infraestrutura necessária para comportamentos seguros.

Palavras-chave: Precauções Universais; Conhecimentos, Atitudes e Prática em Saúde; Equipe de Enfermagem.

RESUMEN:

Evaluar la adhesión y conocimiento a las Precauciones Estándar (PE) y el impacto de factores individuales, relativos al trabajo y organizacionales en la adhesión del equipo de enfermería a dichas medidas de seguridad.

Estudio transversal, correlacional, descriptivo, por medio de los siguientes instrumentos: cuestionario sociodemográfico, cuestionario de Adhesión a las PE (CAPE), Cuestionario de Conocimiento sobre las PE (CCPE) y ocho escalas referentes a un modelo explicativo de adhesión a las PE. La muestra final se compone de 172 profesionales. El CAPE obtuvo un promedio de 71,94 puntos (DP = 6,40) y el CCPE, 15,44 (DP ± 1,48). Se verificó una correlación significativa ($p \leq 0,001$) entre la adhesión y la personalidad de riesgo, percepción de riesgo, percepción de obstáculos para seguir las PE, entrenamiento y disponibilidad de EPI.

Se concluye que los factores psicossociales y organizacionales estuvieron correlacionados con la adhesión. No se encontró significancia estadística del impacto del conocimiento en la adhesión a las PE. Sin embargo, se hace necesario la concienciación del carácter multifacético de la adhesión a las referidas de seguridad, que atraviesan factores individuales, pero también organizacionales y que, por lo tanto, necesitan de implicación directa y permanente de la gestión de las instituciones de salud, por medio de educación en la salud y la infraestructura necesaria para comportamientos seguros.

Palabras clave: Precauciones Universales; Conocimientos, Actitudes y Práctica en Salud; Grupo de Enfermería.

INTRODUCTION

Standard Precautions (SP) measures are safety measures aimed at both professional and worker safety and are composed of elements such as hand hygiene, use of Personal Protective Equipment (PPE) (gloves, respiratory protection, eye or face shield and apron), safe practices in the handling of sharps, potentially contaminated materials, handling of patient's belongings to prevent Health Care-associated Infections (HAIs) and coughing label/respiratory hygiene. ^(1,2)

In patient care, nursing professionals are more exposed to risks, such as ergonomic, biological (mainly through accidents with piercing-cutting and exposure of mucous membranes to biological fluids), psychosocial (excessive pace of working) among others, such as chemical and physical. It is also important to highlight the high workloads as a consequence of an unfavorable organizational culture. ⁽³⁾

The literature shows that the Industrial Accidents (IA) suffered by health professionals is a global problem and among the risks of accidents that nursing workers are exposed, the biological is the most common, with negative consequences in the socio-economic, psychosocial and physical sphere of the exposed worker. ⁽⁴⁾

Between 2000 and 2010, in Brazil, the number of IA with nursing professionals was 2,569 accidents, representing 44.6% of the total records of these injuries. ⁽⁵⁾ In the context of occupational health and safety of the patient, the SP are strongly recommended measures by agencies such as the CDC and the Ministry of Brazilian Health, for example, the Ministry of Labor established the Regulatory Standard 32 (RS 32) in which it has indispensable measures to protect the health worker's Health and safety. ^(6,7)

In the context of patient safety, the HAIs consist of serious adverse events potentially lethal and easily spread when preventive measures, such as hand hygiene measures, are not properly followed. ⁽⁸⁾ WHO estimates report that of each 100 hospitalized patients, about seven in developed countries and ten in developing countries will acquire at least one HAIs board. Thus, to lower HAI rates, professionals should adopt SP in their daily practice in health institutions. ⁽⁹⁾

Although the SP policy was launched 20 years ago in the world, adherence to these precautions remains low in health facilities, especially in developing countries. ⁽¹⁰⁾ Studies have identified that low utilization of SP is directly related to the level of knowledge and the notion of risks on such measures. ^(10,11)

A national study conducted in São Paulo, with the objective of analyzing the factors associated with adherence to SP among nursing professionals, showed that individual factors (age less than 35 years, having received training on SP in the hospital), labor factors (lower perception of obstacles) and organizational (higher perception of safety climate) were associated with adherence to SP. ⁽¹²⁾

Also regarding the factors related to adherence to SP, studies have evidenced that the knowledge to these measures is inferior to the desired. An integrative review conducted by Porto, Marziale (2016) ⁽¹³⁾ indicated that in 6.6% of the references selected in the period 2005 to 2014 there was a result in the knowledge deficit of the nursing professionals regarding the SP.

International research conducted in a large hospital with 290 participants noted that the values regarding knowledge and attitudes to SP were satisfactory, with about 90% of knowledge and positive attitude. However, in practice, the adherence rate was 50.8%, which shows that adherence is considerably lower than the intention or attitude to adhere. ⁽¹⁴⁾

In this sense, the increase in chronic conditions that lead to a longer hospitalization time, severe and immunocompromised patients, coupled with the emergence of antibiotic resistance, the HAIs have become a theme of great relevance to public health. This whole scenario is associated with the lack of qualification of human resources, inadequate physical structure in health services and ignorance or little application of the measures of prevention and control of HAIs. ⁽¹⁵⁾

In view of the above, the objective of the present study was to evaluate the knowledge, adherence and impactful factors of individual order, related to work and organizational for the adherence of the nursing team to measures of standard precautions.

MATERIALS AND METHODS

Cross-sectional, correlational descriptive study. The study was conducted with nursing staff professionals working in a teaching and research hospital in the Midwest of Brazil.

In the year 2018, the hospital attended 32 medical specialties, with 124 beds and a table of 352 nursing professionals. Data collection took the period from December 2017 to March 2018, in the outpatient clinics (wounds, infectology, ophthalmology, stomatherapy, mental health and cardiology), Medical Clinic Unit, surgical clinic, pediatrics, semi-intensive therapy, Adult Intensive Care Unit (ICU) and neonatal (ICUneo), gynecology and obstetrics, pre-partum, parturition and puerperium, milk bank, conventional and Kangaroo Intermediate nursing Unit, surgical center.

As inclusion criteria, workers were elected who were not on vacation, permits or leave during the period of data collection and had more than six months of professional experience. Professionals who exercised exclusively administrative functions and who were undergoing organizational training related to biosafety were excluded.

According to information from the People Management division of the aforementioned establishment, in the year 2017, the nursing team consisted of 352 nursing professionals, distributed among 78 nurses, 194 technicians and 80 auxiliary Nursing, with a margin of 12% of these holiday professionals or licenses totaling 310 professionals eligible for the study. For the present study, the sample size (n) was calculated considering the proportion of 0.5 ($p = 0.5$; CI: 95%), since the prevalence of the outcome is unknown.⁽¹⁶⁾ Through this calculation, we obtained a minimum sample of 172 professionals, who were randomly selected, by drawing with their respective work scales

Four self-administered questionnaires were used, being a sociodemographic questionnaire, validated for face and content and three questionnaires translated and validated for Brazilian Portuguese: Standard precautions adherence Questionnaire (SPAQ)⁽¹⁷⁾, Standard Precautions Knowledge Questionnaire (SPKQ)⁽¹⁸⁾ and quantitative scales that compose the explanatory model of adherence to SP.⁽¹⁹⁾

The sociodemographic questionnaire contains information on age, gender, education level, professional category, sector of activity, length of work, work accidents, IA notification, training on SP and the provision of PPE by the institution.

The SPAQ was translated and validated for Brazilian nurses^(4, 17) consisting of 20 questions, developed in Likert scale format, ranging from 1 to 4 points. Each answer obtained as "always" is added 4 points; "Often" add up to 3 points; "Sometimes" add up to 2 points; "Rarely" one should add 1 point and "never" nothing adds up (0 points). The possible scoring range varies from 0 to 80 points.

The SPKQ has been translated and validated for Brazilian nurses⁽¹⁸⁾ and consists of 20 binary questions related to workers' knowledge regarding PP. To each correct

answer is added 1 point and to each answer marked “I don't know” or incorrect, nothing adds up (0 points). The possible score ranges from 0 to 20 points.

The scales that make up the Explanatory Model, ⁽¹⁹⁾are Likert scales, with five response options, ranging from 0 to 5 points. (totally agree until totally disagree) . The instrument is composed of 8 scales , totaling 40 questions, distributed in the respective scales: risk perception; risky personality; effectiveness of prevention; obstacles to following PP; work load; safety climate; availability of personal protective equipment; training in prevention of occupational exposure to the HIV virus.

The data were processed and analyzed by SPSS, version 16.0, for Windows 7.0. The double-typing technique was used to compile the data. The numerical variables were exposed by descriptive statistics, in which the mean, median and standard deviation (SD) were calculated. To verify the correlation between adherence and knowledge of the professionals to the SP and the aforementioned constructs, Pearson's correlation was calculated, if normal distribution was verified, which was tested by Shapiro Wilk. For all statistical tests, a significance of 5% was adopted.

Ethical considerations: This research was approved by the Research Ethics Committee (CEP), a teaching and research hospital in Mato Grosso, under the CAAE 55202516.0.0000.55.41 and complied with the principles of resolution No. 466/12 of the National Health Council.

RESULTS

The survey covered 172 nursing professionals from different sectors, it was found that 80.2% are female, with a mean age of 40.1 years (SD ± 8.99), median of 42, with a maximum of 59 and minimum of 24 years. It is noteworthy that 43% reported having between 0 and 10 years of professional experience. (Table 1).

Table 1- Distribution of nursing staff by gender, age, length of professional experience, sharps accidents, accidents with biological material, training participation, hepatitis B vaccination schedule, and knowledge of the vaccine response of a teaching hospital and survey of the municipality of Cuiabá, MT, Brazil, 2018. (n = 172)

Variables	n	%
Male	34	19.7
Female	138	80.2
Age range (years)		
20 to 40	101	58.7
40 to 60	70	40.7
Missing Data	1	0.5
Professional experience time		
0-10	74	43
11 to 20	65	37.7
21 to 30	23	13.3
> 30	9	5.2
Missing Data	1	0.5

Accidents at work with sharps		
Not	123	71.5
Yes	48	27.9
Missing Data	1	0.5
Work accident with biological material due to non-integral skin or mucosa contact		
Not	131	76.1
Yes	41	23.8
Attendance training on standard precautions		
Not	52	30.2
Yes	120	69.7
Complete hepatitis B vaccine schedule		
Not	14	8.1
Yes	158	91.8
Examination for knowledge of hepatitis B vaccine response		
Not	57	33.1
Yes	115	66.8

In the descriptive analysis of the SPAQ was obtained mean adherence of 71.94 points (SD = 6.40) and median of 74. The minimum score obtained was 48 and the maximum was 80 points. (Table 02). It is worth noting that only 44.18% of the professionals reported always wearing glasses and protective masks when there is a possibility of contact with blood spatter, body fluid, secretion or excretion. Only 44.19% said they always performed the substitution of the disposal containers of piercing-cutting material, when they reach 2/3 of their filling.

Table 2 - Distribution of nursing professionals according to responses to the items that make up the Standard Precautionary Adherence Scale of a teaching and research hospital in the city of Cuiabá, MT, Brazil, 2018. (n = 172)

Standard Precautions Compliance Questionnaire	Ever		Often		Sometimes		Rarely		Never	
	F	%	F	%	F	%	F	%	F	%
I perform hand hygiene before assisting	142	82.5	24	13.9	4	2.3	2	1.1	-	-
I perform hand hygiene after exposure to body fluids	163	94.7	7	4	1	0.5	-	-	1	0.5
Frequency of wearing protective gloves when contacting potentially contaminated biological materials										
Blood collection	154	89.5	11	6.4	6	3.4	-	-	1	0.5
Venous puncture	143	83.1	14	8.1	14	8.1	1	0.5	-	-
Contact with blood samples	148	86	15	8.7	8	4.6	1	0.5	-	-

I wear a protective mask when there is a possibility of contact with body fluid	123	71.5	28	16.2	16	9.3	4	2,3	1	0.5
I wear goggles when there is a possibility of contact with body fluid	76	44.1	26	15.1	32	18.6	26	15.1	12	6.5
I wear a protective apron when there is a possibility of contact with body fluid	94	54.6	39	22.6	21	12.2	8	4.6	10	5.8

Note: Conventional sign used: - Numeric data equal to zero not resulting from rounding.

The mean knowledge obtained by SPKQ was 15.44 (SD \pm 1.48). A maximum score of 19 and a minimum of 10 points was verified. The median value was 16 points. The correlation with the SPAQ was 0.0123, with P = 0.8726, demonstrating that there was no correlation between the scores. (Table 3). Regarding the answers to the SPKQ, 95.93% of the participants reported knowing what SP measures are, however, 72.09% responded erroneously by highlighting that adherence to SP measures has as main objective to protect only the health team, neglecting the Patient safety.

Table 3 - Distribution of nursing team responses obtained by applying the knowledge questionnaire on standard precautions in a university hospital in Cuiabá, MT, Brazil, 2018. (n = 172).

Knowledge about standard precautions	Right		Incorrect	
	F	%	F	%
Knowledge of standard precautionary measures.	165	95.9	7	4
Adherence to standard precautionary measures aims to protect the health team.	48	27.9	124	72
Hand hygiene should be performed while providing care to different patients.	152	88.3	20	11.6
Since wearing gloves can prevent hand contamination, you do not need to sanitize your hands after removing them.	168	97.6	4	2,3
Respiratory symptomatic patients (coughing, sneezing, etc.) should be kept at least 1 (1) meter away from other ward patients.	121	70.3	51	29.6

When providing nursing care to patients with hepatitis C or HIV, only standard precautionary measures need to be taken.	111	64.5	61	35.4
When providing nursing care to patients with active tuberculosis or chickenpox, standard precautionary measures in addition to droplet precautionary measures are required.	30	17.4	142	82.5

Source: Own.

The descriptive analysis of the explanatory model of adherence to SP (table 4) obtained a mean of answers of 3.47 points, with standard deviation of 0.57. In the item risk personality, an average of 1.51 responses was verified, with a standard deviation of 0.53. The correlation with the QAPP was 0.1949, classified as a weak, positive and significant correlation ($p \leq 0.001$).

Table 4- Distribution of nursing staff according to work-related individual and organizational factors by the model validated by Brevidelli and Cianciarullo, in a teaching and research hospital in the city of Cuiabá, MT, Brazil, 2018. (n = 172)

Brevidelli and Cianciarullo explanatory model items	I totally agree		I agree		Undecided		I disagree		Strongly disagree		
	F	%	F	%	F	%	F	%	F	%	
Risk Perception											
The risk of getting infected with HIV at work is low.	8	4.6	37	21.5	3	1.7	46	26.7	78	45.3	
In my work I am exposed to HIV contamination	68	39.5	84	48.8	7	4	10	5.8	3	1.7	
There is a high risk of poking me with a contaminated needle at work.	74	43	67	38.9	10	5.8	18	10.4	3	1.7	
Risk Personality											
I like to take risks in my life	1	0.5	6	3.4	10	5.8	64	37.2	91	52.9	
Sometimes I do dangerous things out of emotion.	-	-	1	0.5	7	4	52	30.2	112	65.1	
I prefer new and exciting experiences even if they are dangerous	1	0.5	6	3.4	4	2.3	57	33.1	104	60.4	
Obstacles to Following Standard Precautions											
PP doesn't allow me to do my job the best way	2	1.1	4	2.3	7	4	80	46.5	79	45.9	

Often the accumulation of daily activities interferes with my ability to follow PP 8 4.6 33 19.1 13 7.5 76 44.1 42 24.4

Sometimes not enough time to use SP 3 1.7 39 22.6 10 5.8 72 41.8 48 27.9

Training and availability of personal protection

All equipment and materials needed to prevent my contact with the HIV virus are available and easily accessible. 27 15.6 87 50.5 20 11.6 36 20.9 2 1.1

Employees are taught to be alert and recognize potential health hazards at work. 15 8.7 95 55.2 30 17.4 26 15.1 6 3.4

I had the opportunity to be adequately trained in the use of personal protective equipment to protect me from exposure to HIV. 21 12.2 88 51.1 27 15.7 31 18 5 2.9

My hospital offers specific training on bloodstream infections 16 9.3 22 12.7 91 52.9 30 17.4 13 7.5

Note: Conventional sign used: - Numeric data equal to zero not resulting from rounding.

DISCUSSION

The results evidenced that the female predominance in the nursing team remains, in consonance with national studies. ⁽²⁰⁾

It is important to highlight, however, that this stereotype of female representation is undergoing increasing demystification, demonstrating a tendency to masculinization. This evaluation was also evidenced in the research that the Federal Nursing Council (COFEn) and Fundação Oswaldo Cruz (2015) performed in order to outline a nursing profile in Brazil, in which it cites that there is a male tendency for the increasing number of Professionals, with the presence of 15% of men in this labor market and this tendency stood out from the decade of 1990 and has been sustaining in recent years. ⁽²¹⁾

The IA with potentially contaminated biological materials (PCBM) showed considerable indices, since 37.80% of the professionals reported having already suffered this type of IA. Despite being a considerable value, it can be considered below the national scenario, in which the incidence in recent years ranged between 41 and 80.4% of IT with PCBM. ⁽²¹⁾ This evidence may be related to the adherence of the professionals to the training related to SP, since 69.7% of the professionals reported having participated in training on the subject.

As for the time of professional experience, it was verified that 43% had less than 10 years of experience. When analyzing this variable, a study found a similar result and stresses that this is a relatively young population, or young adult, indicating that health professionals have little experience in the sector of activity. ⁽¹²⁾

The present study demonstrates that the percentage of vaccination for hepatitis B is within the expected, which may be related to the greater availability of free vaccine in health clinics from the mid-90. However, there is a need for everyone to know of the confirmation of the immunity conferred by the three doses of vaccination for hepatitis B and the consequent presence of the Anti-Hbs antibody. It is noteworthy that health workers, especially nursing, are more Susceptible to contracting immunobiologically preventable infections and therefore, the science of immunization efficacy should be encouraged. ⁽¹¹⁾

Regarding the trainings on the SP performed prior to the study, about 69.7% said they had already done, being the vast majority performed by the Hospital Infection Control Commission (HICC) in the year 2017. However, it is noteworthy that the SPKQ showed knowledge gaps that management and professionals should emphasize in the themes of health education, which should occur permanently and actively. ⁽²²⁾

The results related to adherence to SP showed that the vast majority of workers self-declared always adhere to SP. However, it is known that the gold standard to verify the adherence of workers to safety measures is the observation – the example The systematic observation of the adherence of professionals to the practice of hand hygiene (HH)- the study shows that professionals tend to overestimate adherence through self-reporting. ⁽¹⁷⁾

In this context, regarding the items of the SPAQ, in relation to the analysis of HH, it was evidenced that only 82.5% of the sample reported always performing the HH before providing care to the patient and 94.7% after the assistance, which shows greater concern of professional with safety than with patient safety and prevention of HAI. However, an observational study conducted with health or nursing professionals found that only 5.8% of the professionals performed MH before aseptic procedures and only 39.5%, after performing these and possible contact with PCBM. ⁽²³⁾

It is also noteworthy the study by Pia-Morais and Collaborators ⁽²⁴⁾ indicates that there is a statistical difference in the level of adherence between the nursing team according to the Human Development Index (HDI) of each country. In this context, health workers from countries with low socioeconomic status are likely to adhere less to SP when compared to workers from more developed countries.

Self-reported adherence to the use of procedure gloves showed that 83.1% of the professionals reported that they always use them to perform venous puncture and 89.5% in blood collection. Data disclosed by a study conducted in the state of São

Paulo-Brazil, referring to the analysis of 62,970 notifications of exposure to PCBM, found that the use of procedure gloves during the time of IA was self-reported in 74.4% of the times, however, a study observational study showed that these were used only in 35.4% of the cases of medication administration and venous punctures, as well as in only 18.9% of the cases involving blood collection. ⁽²⁵⁾

Regarding the use of goggles and protective mask, only 44.1% and 71.5% of the professionals, respectively, reported using the aforementioned equipment. Tipple and Collaborators⁽²⁵⁾ evaluated the occurrence of IA by means of records of mucocutaneous exposures, the goggles were not used in any of the accidents recorded. Considering that these equipment provide protection mainly against accidents with exposure to mucous membranes, it is essential to use it. It is noteworthy that even having the knowledge of the benefit of its use, the professionals justify the non-use referring that they are difficult areas to be affected ⁽²⁶⁾.

The use of protective apron followed the same tendency to non-use, since 65% of the workers stated that they always use the possibility of contact with PCBM, evidencing the need to reinforce the use of this PPE for the professionals. Arantes ⁽²⁷⁾ evidenced in his study through notification forms that 65.4% of health workers were not using the protective apron at the time of.

In consonance with the analyses raised regarding the deficit of knowledge about SP, the same was also found in an integrative review conducted by Porto, Marziale ⁽¹³⁾, which indicated that in 6.6% of the studies selected in the period from 2005 to 2014 demonstrated a lack of knowledge of nursing professionals regarding SP in the following elements: hand hygiene, accident management and environment cleaning, work accident notification services, conducts facing the occurrence of a Waste disposal and disposal of piercing and other safe practices.

Referring to aerosol precautions, more precisely patient care with active tuberculosis or varicella, it was verified that 82.5% of the participants did not know how to answer this question, confounding aerosol precautions with precautions for droplets, thus exposing professionals of the multidisciplinary team and companions to serious risks of contamination. Another study, when assessing this important item, evidenced the lack of knowledge of the professionals about the precautionary measures by aerosols ⁽¹⁸⁾.

Another important problem evidenced was that the stigma related to the provision of care for patients with HIV can still be observed nowadays, since only 64.5% responded that for the care of these patients it is necessary to adopt only the measures of SP. Nursing professionals interviewed in one study ⁽²⁸⁾ reported the realization of adequacy of nursing care provided to the patient known to be HIV positive, in relation to the others. These actions are characterized by the excessive use of care when occupational exposure to HIV, contrary to the recommendations of the CDC ⁽⁵⁾.

Regarding the analysis of the explanatory model of adherence, a total of four scales demonstrated a significant statistical correlation with the SPAQ: risk perception, risk personality, obstacles to follow SP and training and availability of protection Individual, scales that have been able to explain that individuals and organizational factors have a direct impact for safety measures to be adhered to.

The risk perception scale showed that most participants were undecided in agreement with the scale items. A study by Piai-Morais ⁽²⁴⁾ presented an average of 4.54 points, demonstrating that nursing professionals perceive the risk of contaminating their care activities.

Studies have shown that the risks with greater perception of contamination by health professionals are the biological risks, and among them, the fear of being infected with the HIV virus is the most evident due to its intense dissemination in social media, creating the culture of fear. However, it is noteworthy that pathologies such as hepatitis B and C have a greater number of IA-related infections compared to HIV ⁽²⁹⁾.

The obstacle scale to follow the SP showed a moderate and significant correlation with the SPAQ, which indicates an important influence of adherence to SP. The result shows that, the greater the perception of obstacles of the professional to follow measures of security, the lower will be adherence to these measures. From this, another study states that professionals who observed fewer obstacles to adherence make greater use of SP ⁽¹⁹⁾.

A significant correlation ($P = 0.0212$) was also verified in the item training and availability of individual protection with the SPAQ. Thus, it is verified that the training and availability of PPE exert an important influence on adherence to SP. With the same result, the study by Félix ⁽¹²⁾ showed that specific training on SP performed by the institution increased the adherence of Which possibly entails greater protection for the professional and prevention of HAIs.

The work accident with exposure to biological material among nursing workers is still a reality present in many health institutions, especially in developing countries. Effective strategies that exploit the worker's educational practices, such as training with active participation, health education, in a periodic way, need to be adopted ⁽¹²⁾.

Together, elements such as the organizational culture, the management model and the organization of the work adopted, the valorization of workers and the working conditions offered are of paramount importance to increase the worker's adherence to standard precautions, As well as the supply and availability of PPE must be ensured by the health Organization according to regulatory Norm 32 ^(12, 30).

CONCLUSION

Occupational accidents with exposure to biological material are still constant in the Brazilian nursing scene, as well as in the investigated health institution, mostly recurrent and with negative consequences in the physical, psychosocial, spiritual and financial.

The nursing team's knowledge of the standard precautions is lower than recommended, especially on the subject of aerosol precautions, which exposes workers to potentially fatal biological risks.

The study revealed that individual and work-related factors (risk personality, risk perception and perception of obstacles to follow SP) and organizational (training and availability of PPE) impact adherence to standard precautions and therefore, health

education activities should consider that the theme of adherence to SP is complex, dynamic, multifaceted and also organizational responsibility.

We emphasize the need for preventive educational actions to promote workers health and prevention of diseases for all professional nursing categories. The involvement of management is important in this issue to promote the continuous participation of the team and the trainings on the aforementioned theme, as well as to promote a favorable environment for adherence with availability of protective equipment and security and climate of institutional security.

Moreover, because it is a cross-sectional study with a self-administered instrument, it is known that the validity of the findings may suffer the influence of the participant's subjectivity and suffer memory bias, which reinforces the need for observational studies to demonstrate the adherence of nursing professionals to safety measures.

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