



Occupational risks and adherence to standard precautions in intensive care nursing work: workers' perceptions

Elisa Gomes Nazario^a
Silviamar Camponogara^b
Gisele Loise Dias^c

Riscos ocupacionais e adesão a precauções-padrão no trabalho de enfermagem em terapia intensiva: percepções de trabalhadores

^a Universidade Federal de Santa Maria. Programa de Residência Multiprofissional Integrada em Gestão e Atenção Hospitalar no Sistema Público de Saúde. Santa Maria, RS, Brazil.

^b Universidade Federal de Santa Maria, Centro de Ciências da Saúde, Departamento de Enfermagem. Santa Maria, RS, Brazil.

^c Universidade Federal de Santa Maria, Departamento de Enfermagem, Programa de Pós-Graduação em Enfermagem. Santa Maria, RS, Brazil.

Contact:

Elisa Gomes Nazario

Email:

nazario.elisa@gmail.com

Article based on the final course monograph entitled "Riscos ocupacionais e precauções padrão: percepções de trabalhadores de enfermagem em terapia intensiva-adulto", by Elisa Gomes Nazario; presented in 2015 in the Nursing undergraduate program at Universidade Federal de Santa Maria, RS, Brazil.

The authors declare the study was not funded and no conflicts of interest.

The authors report that this work was not presented in any scientific events.

Abstract

Introduction: working at intensive care units leads to great exposure to occupational hazards. *Objectives:* to know how intensive care nursing workers perceive occupational hazards and Standard Precautions (SP), as well as to describe factors that may interfere with the adherence to the recommended SP. *Method:* qualitative, descriptive, and exploratory study conducted between July and September 2015 involving twelve nursing workers from two intensive care units. Semi-structured interviews and thematic content analysis were used. *Results:* the most perceived hazards were psychological or emotional, chemical, biological, and ergonomic. Regarding SP, workers indicated that there was partial adherence, mainly when it concerned the use of PPE. We identified the availability of protective materials and the awareness as factors favoring the adherence to SP. As unfavorable factors, feeling of self-assurance, work organization and structure of units, number of employees, workload, haste, unforeseen circumstances, and prolonged time for diagnosing patients with infectious diseases. *Conclusion:* despite the personal issues involved in the perception of occupational hazards and in deciding whether or not using SP, the authors understand that it is possible to enhance the factors favoring adherence.

Keywords: occupational health; occupational risks; occupational exposure; intensive care units; nursing.

Received: 05/12/2016

Reviewed: 09/21/2016

Approved: 10/14/2016

Introduction

Working is crucial to integrate individuals into society and directly influences people's living conditions, including physical and psychological well-being aspects¹.

The relationship between work and health must be seen as decisive when considering health problems that may affect workers. In this perspective, it is necessary not only to ensure suitable conditions for them to develop their activities, but also to protect and promote their health².

Regarding the work of health professionals, there are circumstances related to the specificity of nursing care that constantly influence them and can interfere directly in their destabilization, as they are often exposed to various occupational risks³. In some sectors, this panorama can become even more worrisome, as is the case of intensive care units⁴.

What differentiate an Intensive Care Unit (ICU) from other areas is that it is a sector intended for complex care to patients suffering from serious damages to their health. They need various technological resources, as well as a specialized multidisciplinary team⁵. The treatment usually involves continuous monitoring and permanent care, because these patients' health instability is constant⁶.

In this view, ICU nursing workers' daily life involves several stressing factors – among them, the frustration of not being able to succeed recovering the patients and by living with the imminence of their death⁷. Moreover, the intensity of the care provided in this type of unit – such as higher frequency in carrying out procedures – consequently subjects these workers to greater exposure to hazards⁴.

Resolution 07, from February 24, 2010, by the Brazilian Health Surveillance Agency (ANVISA), fixes the standards for running intensive care units, aiming to reduce risks for patients, workers and the environment. This Resolution defines ICU as a critical area where there is increased risk for healthcare-related infections. Such risk may be related to activities involving biological material, in carrying out invasive procedures and by the presence of patients who are more susceptible to pathogenic agents⁸.

Due to this, ICU must have institutional regulations related to biosecurity measures that should consider occupational and environmental safety in relation to biological, chemical and physical aspects. For this, it is vital to provide guidance on the use of both personal and collective protective equipment besides on handling, transporting and disposing biological material⁸.

Biosecurity measures include Standard Precautions (SP), which may be seen as strategies adopted by health care workers to deal with any procedure and to reduce the risks of pathogenic agent transmission⁹⁻¹¹. These strategies include actions such as the use of personal protective equipment (PPE), immunization and proper management of waste from health services¹².

However, intensive care nursing workers' adherence to SP has been unsatisfactory, as they do not fully follow all protection recommendations during their work activities¹³. Consequently, knowing how workers perceive themselves in this context, as well as the factors related to the decision of adhering or not to SP, is an important way of seeking alternatives that will result in less exposure to occupational health hazards.

This study aimed at understanding intensive care nursing workers' perception on the occupational hazards they are exposed to and on SP; it also describes the factors that interfere in the adherence or not to SP in the investigated intensive care units.

Method

Qualitative descriptive study¹⁴ conducted in two units of a university hospital in the South region of Brazil: an Intensive Care Unit (ICU) and an adult Cardiac Intensive Care Unit (CICU). The participants were nurses (higher education) and nursing technicians (secondary education) from these two units. In the period of the study, the two units had a total of 62 nursing workers, 38 from the ICU team and 24 from the CICU team.

We used the following inclusion criteria: the nursing professionals should be working in these units for at least six months. Regarding the exclusion criteria we considered absences from work due to vacations, sick leave or others during the period the study was carried out. According to these inclusion and exclusion criteria, 38 workers were selected for the study.

Data were collected from July to September 2015 using a form for the participants' identification and demographic characterization, as well as semi-structured interviews¹⁵.

The order of respondents was set randomly. The researcher contacted each one of the workers to explain the purposes of the study and to invite them to read and sign the Informed Consent Form. The next steps were to fill the sociodemographic identification form and to start the interview, which usually lasted between twelve and twenty minutes. The data collection was interrupted when the researcher considered that the respondents' answers had become repetitive, indicating data saturation¹⁶. The researchers sought to maintain a proportional number between occupational categories and the studied units.

After the interviewees had given their consent, the interviews were recorded by a digital recorder (MP4 player). Then the interviews were transcribed and identified with numbers in sequence, according to the order in which they were held and the professional category of each participant (E1, E2, E3, T1, T2, T3).

The transcribed data went through thematic content analysis to reveal the different axes of meaning, which allowed the researchers to have a critical view on the subject¹⁴.

The study complied with the ethical principles of Resolution 466, from 12 December 2012¹⁷, and was previously approved by a Research Ethics Committee (Caae 45318815.0.0000.5346).

Results

Twelve intensive care unit workers (4 nurses and 8 nursing technicians) were interviewed. They were mostly female, between 24 and 46 years old, with 4 to 25 years of professional experience, and working in the unit from 8 months to 19 years.

In general, in the semi-structured interviews, the participants did not show any difficulties in speaking about occupational risks and SP. Most of them showed a lot of interest in talking about the subject, leading to long-lasting and content-rich interviews.

From the data analysis, four thematic categories were established: Understanding occupational risks; Standard Precautions: I use PPE, but...; factors that favor adherence to Standard Precautions; factors

that are unfavorable to adherence to Standard Precautions. Each category has special segments that help to understand them (fully accounted below).

Understanding occupational risks

When commenting on their understanding about the concept of occupational risk, most workers conveyed a meaning to the term as something harmful to their health. In their views, hazards are constantly present in their workplace.

Occupational risk, in my opinion, is all that can bring some sort of damage to my physical integrity [...] any kind of impairment that could result in some pathology. (T3)

Still regarding this interpretation, the participants addressed this frequent issue in the daily nursing practices, and stated that in any profession workers will always be subjected to certain risks.

I think that specifically in my work there are some occupational risks, not only related to the physical contact with the patient, but also to the contact with the environment itself [...] but, as it is [...] in an intensive care unit, these risks will always exist [...](E4)

In addition, they also mentioned continuous exposure to occupational risks, demonstrating how workers feel vulnerable concerning work environment and the way work is carried out.

[...] we're afraid [...] you know you have to do it, it is the profession you have chosen, but that doesn't stop you from feeling worried [...](T3)

Regarding occupational risks, in order to clarify the concept, participants cited examples of the different types of hazards to which they were exposed. This strategy seemed to help them expressing themselves, ensuring clearer reports.

[...] we're here, there's a hemodialysis wire connected there and we may trip on it and fall, it's a hazard. Fluids and secretions are hazards; a monitor that may trigger an electrical discharge is a hazard, a bare wire is a hazard, there are so many things [...] medication, aerosol, needle, syringe [...](E1)

Among the occupational hazards mentioned by the workers the following are included: ergonomic, including issues such as physical effort and muscle injuries; psychological or emotional, associated with the stressful atmosphere in the workplace; chemical, including exposure to chemotherapeutic

agents when patients are under treatment; biological, associated with contact with secretions, needle sticks and micro-organisms.

[...] heavy patients every day, patient up, patient down, my spine and arms, I can feel it already, actually [...] I believe it is caused by work, every day at this pace. (T8)

We stand up for many hours, I feel it mostly in my legs [...] You get to the end of your shift feeling pain, both from lifting the patients and from moving them from one stretcher to another, you end up using a lot of strength [...] this results in less productivity due to exhaustion. (E2)

[...] there's the matter of the close environment, which I believe is pretty stressful [...] because the emotional fatigue is many times worse than the physical. (E3)

Due to the situation of the ICU, to this technological density, to invasive procedures, I think that is how we are subjected to biological risks [...] of hurting ourselves with needle sticks, of having secretions spilled on us [...] (T5)

Standard Precautions: I use PPE, but...

Concerning protection measures associated with SP, the respondents mainly talked about the use of PPE. They described how PPE was used individually and the way this issue was seen in their workplace, not only in regard to their co-workers, but also to the staff in general.

[...] we try to use PPE as much as possible [...] I think everyone wears them, you know? I think the adherence to them is pretty good [...] So, if you go there you see: everyone has an apron on, not everyone is wearing a mask and cap, but apron, gloves and goggles, these three are quite frequent [...] (E1)

[...] I try to use as much as possible the PPE the institution offers, such as goggles, gloves, aprons, [...] Of course we try to use them when we think we will be more exposed, but we have experienced unexpected situations before [...] while not prepared with the PPE we should be wearing [...] (E3)

In some accounts, at the same time that respondents claimed to use PPE, they also said it did not fully occur the whole time they spent at their workplace or with all the procedures they carry out. According to them, this was the case with some protective equipment, especially goggles and mask.

[...] it could be improved, because I see people don't often wear PPE, only the basic ones that are the gloves [...] but goggles, sometimes we don't see people wearing, sometimes, neither the mask [...] (E2)

The issue of hand cleaning stands out. This procedure was associated with infection and contamination prevention, viewing other patients' protection as well as the worker's own protection.

[...] every patient is a potential risk, so standard measures are meant for everyone [...] I use an apron for all patients, gloves for all patients, hand hygiene, with lots of alcohol even when there's no dirtiness, because I think this is how I can contribute [...] (E3)

[...] you have to think ahead, protect yourself, because in addition to protecting the patient, we have to protect ourselves, like, washing our hands to prevent bacteria [...] (T6)

Factors that favor adherence to Standard Precautions

This category resulted from the analysis of the reports on factors that could help making more workers adhere to SP. It is understood that, as adherence increases, exposure to certain occupational risks decreases. In this sense, a condition mentioned in almost all the participants' statements was related to the PPE availability in the units, a factor that would help bringing more workers to use them.

I think the factor that helps is to have the PPE available in the unit, for example, having our own goggles on the edge of the bed, having the material available for us to use when caring for the patient, having an apron [...] so the main factor, for me, is to have such equipment ready for use in the work environment [...] (E4)

[...] I don't think that's a problem because we have all the PPE, we have them available in the unit, so nobody is stopped from using them [...] I think there's no problem about this issue [...] (T8)

Another issue mentioned as favorable to decrease the exposure to occupational hazards is the use of safer equipment and materials. These technologies are observed and valued by the participants in their daily practice. There is also concern about the quality of protective equipment and the desire that they actually ensure the worker's protection.

[...] now we have these small lancets to carry out HGT, but in the past, when we used subcutaneous

needles, that was a constant risk, it was an imminent hazard (emphasis) [...] Now, with the lancet, it is safer [...] (T2)

[...] I'd like that the hospital, as much as possible, always searched for what's best concerning PPE [...] always checking the market to see if they can get a pair of goggles that offers more protection... gloves, a mask...something that will really protect you [...] (T3)

Workers' awareness also emerged as a factor that could influence the adherence to SP, not only by stimulating their usage, but also by not considering them important. One of the respondents referred to the workers' self-confidence – this could create situations where they do not use protection equipment.

[...] they still resist using it, you know? They are sort of lax about it, sometimes they use it, sometimes they don't, but the stuff's all there, all you need to do is ask and they'll provide it, but it's up to each person whether they will use it or not [...] (T6)

It is a matter of consciousness. I think the main factor is the employee's consciousness, the person's consciousness. And self-confidence, I think, may jeopardize it somewhat, in the sense that it has you thinking nothing's going to happen, and you end up being a bit complacent, not using the PPE, but then it's the person's own responsibility, [...] it is up to the consciousness of the professional [...] (T5)

Some participants addressed the influence that situations previously experienced have on their individual awareness. Thus, depending on the meaning that each of them assigns to these experiences, this could contribute to their awareness regarding the importance of the use of SP.

[...] I think individual characteristics and your previous experience in the workplace can help or not the use. For example, if you come from an environment where such equipment did not exist, the tendency is that you end up not using them. Now, in case of previous experiences of working in a work environment where this material exists, or having suffered some type of incident or accident that has contributed to enhance the importance of their use, I think that the employee will use them, and this will thus help the use of the equipment. (E4)

Factors that are unfavorable to adherence to Standard Precautions

In the same way positive reports in relation to protective measures and SP emerged, discussions about the difficulties hindering the adherence

to these measures were held. This category was established based on the different factors identified as those that interfere negatively in the adherence to the SP, causing nursing workers to be more exposed to occupational risks.

One of the difficult aspects mentioned by the workers was the structure of the units, not only in relation to their physical structure, but also to the position of furniture and organization of materials used.

I think the biggest problem of this ICU is its structure, I think everything's out of place, and things are impractical in here. [...] Now things are good here at the back, because the material is all here [...] but now whoever is in the hall has to really go out of their way to get the material [...] (T1)

[...] also the logistics in our ICU... the physical space, I believe does not help to make things easier or even to exercise this control [...] (E3)

Another factor that was discussed at great length was the number of workers in the nursing staff, especially regarding nursing technicians. According to the respondents, the number of workers should be increased due to the demand in this service. Moreover, this factor eventually jeopardizes care, hindering the use of protective measures, as well as submitting workers and patients to a greater exposure.

Work's getting more complicated, heavier, patients are requiring more and more care [...] They increased the number of beds and kept the same number of employees, so it's getting increasingly overloaded [...] (T2)

[...] and nowadays, here in intensive care, we lack the support staff, our legislation foresees one technician every two beds, but we lack support staff [...] (E3)

From this perspective, and also considering the work overload that was pointed out, there are two interrelated factors that are detrimental to the use of SP: the rush to get the job done and adverse situations.

The former occurs due to the usual work pace in intensive care units and was mentioned by the respondents. The latter is related to reaction time in case of patients' urgencies and emergencies, which require immediate action by the nursing staff. Regarding this, one of the workers emphasized that firstly there is the worker's concern to solve the problem, and then to protect himself.

rk overload, the rush, urgency to get things done, we end up leaving care aside. We end up doing things hastily [...] not using the PPE as we should've [...] (T2)

[...] You end up becoming overloaded and even more susceptible because you have less time to put the protection equipment on, to wash yourself properly, because sometimes you need to rush [...] That is very detrimental. (T1)

[...] The patient is having a heart attack, you're not going to put your goggles on, you're going to massage the patient [...] this attitude of running to the goggles and putting them on doesn't exist [...] You have to address the problem first. (T5)

The late diagnosis of infecto-contagious diseases was also indicated as a factor that hinders the use of the SP. This delay raises the risk of contamination as well as workers' and patients' exposure time to microorganisms.

[...] The patient doesn't always have all the exams done when he arrives here [...] For instance, in many cases the patient has tuberculosis and we only know this after he has been here four, five days or more [...] Of course we take care, but we take double care when we know about it [...] and we only know about it when it's already too late [...] (T3)

The statements allowed knowing the participants' perception on the occupational risks to which they are exposed, and on SP. They mentioned the risks considered more constant, while exposing their concerns regarding their safety. In addition, they also addressed various aspects they believed may interfere in the decisions on whether to use or not SP. Thus, it was possible to provide the description of factors that cause such interferences, whether positively or negatively.

Discussion

The results showed that all nursing professionals understood the meaning of occupational risks in a satisfactory way. This was mainly based on professional experience, leading to palpable arguments on the subject. In this sense, we stress that occupational risks are understood as possible situations that may affect workers' health within their workplaces¹⁸.

The explanation was favored due to the qualitative methodology adopted in the study, which made it possible to seize the opinions and

examples provided by workers concerning the hazards they observed in the units. The ergonomic, psychological or emotional, chemical and biological hazards were the most palpable, corroborating studies on this field¹⁹⁻²¹. As the workers expressed themselves about how they identified these hazards, they also correlated, in an easier way, the adherence to SP related to occupational exposure. It should be highlighted that dialogue was also made easier due to the approach chosen in the study, as previously mentioned.

In the reports on ergonomic hazards, physical weariness was pointed out by workers as often leading to tiredness and even exhaustion. This occurs primarily due to the constant need for movement and motor actions during care, which is provided in a very close physical distance to the patient²⁰, and may be related to a high workload²².

According to the respondents' perception, physical weariness is also associated with the unfavorable factors to the use of SP, as rush in carrying out activities and the reduced number of employees. Small staffs of intensive care nursing workers – a common situation in this area – often face difficulties mainly due to the accelerated work rhythm, which may cause problems in their self-care²³. That is why it is essential to plan human resources according to the demand, in order to minimize the workload and to make the workplace safer and less stressful²⁴.

Still according to the participants, the issues related to haste and number of workers may affect the adherence to SP due to the reduced time to make decisions and the need to act quickly. During interferences, the professionals do not value their own safety, that is, they only provide immediate care to the patient and end up not wearing the protection equipment as they should. Without protecting themselves, while taking care of the patient's needs, workers end up forgetting about their own self-care and, consequently, may be even more exposed to hazards in their workplaces^{21,25}.

We understood that, in the same way that a nursing staff must be prepared and qualified, it also has to be able to provide care in a dynamic way ensuring not only their own, but also the patients' safety^{26,27}.

The workers also added another risk to their psychological or emotional weariness resulting from the characteristics and complexity of the intensive therapy activities, including patients'

clinical instability and imminent death²⁸. If this condition becomes too frequent, negative feelings such as anxiety and insecurity may worsen over time²⁹. Coping with these situations and with high work requirements may result in emotional damage³⁰, since not only effort is needed to avoid being let down by such facts, but also determination to stop these feelings from affecting the quality and performance of tasks.

Regarding chemical hazards, the respondents mentioned nursing workers' exposure to the medications used for the patients' treatment. There is a constant handling of various types of medicines as it is the nursing staff responsibility to administer medications to patients³¹.

The accounts were mainly related to the concern with the exposure to chemotherapeutic medications. This risk is very relevant as there are many possibilities of these medications components reaching the workers through their skin, inhalation of aerosols and handling of the excreta of patients who are under this kind of treatment³². However, caution and attention during drug handling must always be required. It demands a keen awareness about this kind of exposure, as well as the adoption of correct precautions³³.

Exposure to biological occupational hazards was also addressed. The workers showed concern about the frequency of this exposure, mainly concerning the heavy biological load of secretions and needlestick and sharp instruments.

Regarding secretions and body fluids, this risk becomes even more worrying when one remembers that workers reported difficulty in wearing masks and goggles, what increases the risk of accidents. A study by Brand and Fontana³⁴ corroborates such conduct pointing out that nursing workers usually just wear gloves and aprons, neglecting other protective equipment.

The adoption of effective precaution measures, which would act as barriers against contamination with secretions, helps protecting not only workers, but also patients³⁵. It is still necessary that due attention be given to potential accidents that may be caused by exposure to body fluids, since, in many situations, there is no great worry about this when compared, for example, with the professionals' concerns with needlestick and sharp instruments³⁶.

Handling infected needlestick and sharp instruments is a frequent activity in nursing. The

physical proximity between nurses and patients during most of their working time³⁷ and the constant dealing with razors and needles are typical aspects of these professionals' routines³⁸.

So, when we think about nursing workers' continuous exposure to different biological agents, we recognize the importance of wearing PPE during all kinds of procedures³⁴. In addition to being able to identify biological risks exposure situations, nursing staffs also needs to adopt strategies to promote their own health³⁶.

One of the accounts pointed out that delaying patients' diagnosis is an unfavorable factor towards workers' adherence to SP. It stands out that nurses – who had been in touch with patients before they received a positive diagnosis – might feel invulnerable, as they notice nothing wrong happened to their health in that situation. That is why the use of SP is highly recommended during the whole time a patient is being cared, regardless of his/her diagnoses and whenever there is a possible exposure situation to body liquids and secretions³⁹.

It is well known that patients in intensive care units, due to their clinical impairment and constant need of invasive therapeutic techniques, are more predisposed to different infections^{8,40}. Because of this, we reinforce the need for promoting a good quality nursing care aimed at ensuring the safety of patients and workers, which brings no damages, neither to work nor to care processes⁴¹.

Some reports about preventing infections also mentioned cleaning of hands. However, although not all participants showed this concern, those who did, sought to ensure not only their own protection as workers, but also the patients' protection. It is well known that one of the most important steps taken by nursing workers to minimize infections and transmission of pathogens is washing their hands. However, a study demonstrated that this practice, as well as other precautions, and use of safety devices, still lacks unconditional adherence of nursing workers¹³.

The structure and organization of units was another issue mentioned by the workers as being unfavorable to the proper use of SP. Reduced physical space is another problem workers have to cope with everyday. It adds to the often inappropriate improvidence in allocating materials and equipment. A study reinforces ICU nursing workers' perception and dissatisfaction in what concerns intensive care units, implying that for

their work to be carried out properly, adequate structural resources are required⁴².

In light of the presented circumstances, it was possible to cover the relationship between perception of occupational hazards and the need to use SP. This occurs because, despite workers understanding, visualizing and perceiving the risks, they do not use the SP all the time. In this way, viewing promotion of the workers' health, it is still necessary that this recognition reflects effectively on minimizing these risks⁴³.

As may be noted, the use of SP has been permeating the discussion about occupational risks, as they are factors that may be considered essential when thinking about occupational health. Thus, in what specifically concerns the promotion of SP adherence, having protection materials of approved quality available at work stood out as a favorable factor to their use. To ensure workers' safety and to be really effective, PPE must be adequate for each occupational risk and stored in locations with quick and easy access⁴⁴.

In this panorama, the workers' consciousness also influence SP adherence, either by increasing or decreasing their use. It is a very individual and subjective factor. Another highlight was the feeling of self-confidence referred to by the workers. This self-confidence is a result of professional and practical experience gained by workers, which leads them to often neglect the use of protection equipment, since they believe having full mastery of the techniques and not being thus susceptible to accidents⁴⁴.

It is understood that, even after having performed the same tasks for a long time, workers should not neglect their PPE, since if precautions are ignored, occupational exposure and the number of accidents might increase³⁴. As a result of these issues, there is the need to mobilize workers to carry out their labor activities with the adequate equipment⁴⁵.

It was possible to identify the workers' concern in relation to their safety. However, the discussion on this subject needs to be constantly encouraged. Calling for permanent education initiatives, which will inspire the building of knowledge and the reflection on their professional practice, can assist workers in the promotion and prevention of occupational health⁴⁵. These actions need always to be encouraged, especially if we consider that it is through nursing workers' mobilization that we can improve their

perception on the risks to which they are exposed and on how these risks could be minimized⁴⁶.

Moreover, institutions play a significant role concerning SP adherence and occupational risks, considering that, for a proper work environment, it is their responsibility to provide the workers with the PPE needed to carry out their tasks efficiently.

Conclusion

This study made it possible to understand the ICU nursing workers' perception on the occupational risks to which they are exposed and on SP. The workers' perceptions of occupational hazards showed their concepts were very close to its real meanings. Ergonomic, emotional or psychological, biological and chemical hazards were mentioned as being the most frequent and perceived in the workplace, highlighted by them as inherent to their profession – the constant exposure to them was also emphasized. The statements showed that SP, mainly PPE usage, were current. However, not all workers adhered properly to it.

It was also possible to describe some factors that may interfere with SP adherence in intensive care units. Among those which favored it, the protection materials made available to the workers and the use of safer equipment and devices were mentioned. The workers' awareness about occupational safety and risks was also mentioned. This awareness was highlighted as something entirely personal and that may lead to adherence.

Among the factors that disfavored SP adherence, the following were cited: workers' self-confidence, the organizational and structural layout of the units, the insufficient staff number, heavy workload, rush to carry out the activities, unexpected situations and the prolonged time for the diagnosis of patients' contagious diseases.

In spite of the personal issues that may affect perception of occupational hazards and in taking the decision whether to use or not SP, we believe that it is possible to enhance the factors that favor adherence. Health education actions and training need to be maintained and carried out frequently, within the possibilities of each unit. A nurse leader in the nursing staff is essential to motivate workers to reflect and to use the necessary SP.

In addition, as an institutional issue, staff numbers, protective equipment and the material used by workers

need to be constantly revised and improved, taking into account not only budgetary factors, but also workers' opinions about their own safety.

The development of this research allowed many elucidations about the proposed topic; however, it may cause more concerns about this broad universe of factors and issues related to occupational risks and standard precautions. Hopefully, it shall somehow help to improve the knowledge

on the subject, especially regarding the nursing workers involved, who were fundamental for the accomplishment of this study.

It should be emphasized that reflection on the subject is still necessary by nurses, nursing technicians, staffs, and by the hospital as an institution. Since we understand risks as controllable, we should also consider that prevention is feasible and must be encouraged.

Author's contribution

Nazario, EG was responsible for creating the research project, collecting and analyzing the data, and elaborating the article. Camponogara, S and Dias, GL contributed to the creation of the project and to the data analysis and interpretation, in addition to greatly contributing to the critical review and approval of the final version to be published.

References

1. Girondi JBR, Gelbcke FL. Percepção do enfermeiro sobre os efeitos do trabalho noturno em sua vida. *Enferm Foco*. 2011;2(3):191-4.
2. Forte ECN, Trombetta AP, Pires DEP, Gelbcke FL, Lino MM. Abordagens teóricas sobre a saúde do trabalhador de enfermagem: revisão integrativa. *CogitareEnferm*. 2014;19(3):604-11.
3. Duarte MLC, Avelhaneda JC, Parcianello RR. A saúde do trabalhador na estratégia de saúde da família: percepções da equipe de enfermagem. *CogitareEnferm*. 2013;18(2):323-30.
4. Marinho MS, Almeida CT, Andrade EM. Risco ergonômico nas práticas da equipe de enfermagem de uma UTI. *RevCiêncDesenvolvFainor*. 2015;8(1):192-205.
5. Chaves LDP, Laus AM, Camelo SH. Ações gerenciais e assistenciais do enfermeiro em unidade de terapia intensiva. *Rev Eletrônica Enferm*. 2012;14(3):671-8.
6. Santos AC, Vargas MAO, Schneider N. Encaminhamento do paciente crítico para unidade de terapia intensiva por decisão judicial: situações vivenciadas pelos enfermeiros. *EnfermFoco*. 2010;1(3):94-7.
7. Backes MTS, Erdmann AL, Büscher A, Backes DS. Desenvolvimento e validação de teoria fundamentada em dados sobre o ambiente de unidade de terapia intensiva. *Esc Anna Nery RevEnferm*. 2011;15(4):769-75.
8. Agência Nacional de Vigilância Sanitária (Brasil). Resolução Anvisa/DC nº 7, de 24 de fevereiro de 2010. Dispõe sobre os requisitos mínimos para funcionamento de Unidades de Terapia Intensiva e dá outras providências. *Diário Oficial da União* fev 2010; Seção 1:48-51.
9. Agência Nacional de Vigilância Sanitária (Brasil). Resolução Anvisa/DC nº 42, de 25 de outubro de 2010. Dispõe sobre a obrigatoriedade de disponibilização de preparação alcoólica para fricção antisséptica das mãos, pelos serviços de saúde do país, e dá outras providências. *Diário Oficial da União* dez 2010; Seção 1.
10. Brasil. Ministério do Trabalho e Emprego. Portaria nº 485, de 11 de novembro de 2005. Aprova a norma regulamentadora nº 32 (Segurança e saúde no trabalho em estabelecimentos de saúde) [Internet]. *Diário Oficial da República Federativa do Brasil, Brasília (DF)*. *Diário Oficial da União* nov 2005; Seção 1.
11. Brasil. Norma Regulamentadora nº 6, de 08 de Junho de 1978. Dispõe sobre o Equipamento de Proteção Individual – EPI. *Diário Oficial da União*, 06 jul 1978; Seção 1.
12. Silva GS, Almeida AJ, Paula VS, Villar, LM. Conhecimento e utilização de medidas de precaução-padrão por profissionais de saúde. *Esc Anna Nery*. 2012;16(1):103-10.
13. Pereira FMV, Malaguti-Toffano SE, Silva AM, Canini SRMS, Gir E. Adesão às precauções-padrão por profissionais de enfermagem que atuam em terapia intensiva em um hospital universitário. *RevEscEnferm USP*. 2013;47(3):686-93.
14. Minayo MCS. O desafio do conhecimento: pesquisa qualitativa em saúde. 14. ed. São Paulo: Hucitec; 2014.
15. Gil AC. Como elaborar projetos de pesquisa. 5. ed. São Paulo: Atlas; 2010.
16. Fontanella BJB, Ricas J, Turato ER. Amostragem por saturação em pesquisas qualitativas em saúde: contribuições teóricas. *Cad Saúde Pública*. 2008;24(1):17-27.

17. Brasil. Ministério da Saúde. Conselho Nacional de Saúde. Comissão Nacional de Ética em Pesquisa. Diretrizes e normas regulamentadoras de pesquisa em seres humanos. Resolução nº 466, de 12 de dezembro de 2012. Brasília, DF: Ministério da Saúde; 2012.
18. Miguel DB, Loro MM, Rosanelli CLSP, Kolankiewicz AB, Stumm EMF, Zeitoune RCG. Percepção de trabalhadores de uma unidade oncológica acerca dos riscos ocupacionais. *CiêncCuid Saúde*. 2014;13(3):527-34.
19. Oliveira QB, Santos RS, Santos CMF. Acidentes de trabalho na equipe de enfermagem: uma revisão de literatura. *RevEnferm Contemporânea*. 2013;2(1):32-52.
20. Bezerra AMF, Bezerra KKS, Bezerra WKT, Athayde ACR, Vieira AL. Riscos ocupacionais e acidentes de trabalho em profissionais de enfermagem no ambiente hospitalar. *RevBra Edu Saúde*. 2015;5(2):1-7.
21. Araújo SNP. Os riscos enfrentados pelos profissionais de enfermagem no exercício da atividade laboral. *RevEnferm Contemporânea*. 2015;4(2):237-43.
22. Cruz EJER, Souza NVDO, Correa RA, Pires AS. Dialética de sentimentos do enfermeiro intensivista sobre o trabalho na terapia intensiva. *Esc Anna Nery*. 2014;18(3):479-85.
23. Santos TL, Nogueira LT, Silva GRF, Padilha KG, Moita Neto JM. Carga de trabalho de enfermagem em terapia intensiva mediante a aplicação do NursingActivities Score. *Rev ACRED*. 2015;5(9):1-20.
24. Camuci MB, Martins JT, Cardeli AAM, Robazzi MLCC. NursingActivities Score: carga de trabalho de enfermagem em unidade de terapia intensiva de queimados. *RevLatAmEnferm*. 2014;22(2):325-31.
25. Ribeiro RP, Martins JT, Marziale MHP, Robazzi MLCC. O adoecer pelo trabalho na enfermagem: uma revisão integrativa. *RevEscEnferm USP*. 2012;46(2):495-504.
26. Inoue KC, Matsuda LM. Dimensionamento de pessoal de enfermagem em unidade de terapia intensiva adulto de um hospital de ensino. *Rev Eletrônica Enferm*. 2009;11(1):55-63.
27. Tomasi YT, Souza GN, Bitencourt JVOV, Parker AG, Martini JG, Mancia JR. Atuação do enfermeiro na administração de medicamentos em uma instituição hospitalar: estudo descritivo. *Enferm Foco*. 2015;6(1/4):06-11.
28. Oliveira EB, Lisboa MTL. Exposição ao ruído tecnológico em centro de terapia intensiva: estratégias coletivas de defesa dos trabalhadores de enfermagem. *Esc Anna Nery*. 2009;13(1):24-30.
29. Oliveira EB, Souza NVM. Estresse e inovação tecnológica em unidade de terapia intensiva de cardiologia: tecnologia dura. *RevEnferm UERJ*. 2012;20(4):457-62.
30. Fogaça MDC, Carvalho W, Nogueira-Martins LA. Demandas do trabalho e controle: implicações em unidades de terapia intensiva pediátrica e neonatal. *RevBrasEnferm*. 2010;63(4):529-32.
31. Abreu DPG, Santos SSCS, Silva BTS, Ilha S. Responsabilidades éticas e legais do enfermeiro em relação à administração de medicamentos para pessoas idosas. *RevEnfermCent-Oeste Min*. 2015;5(3):1905-14.
32. Borges GG, Nunes LMP, Santos LCG, Silvino ZR. Biossegurança na central de quimioterapia: o enfermeiro frente ao risco químico. *RevBrasCancerol*. 2014;60(3):247-50.
33. Costa TF, Felli VEA. Periculosidade dos produtos e resíduos químicos da atenção hospitalar. *CogitareEnferm*. 2012;17(2):322-30.
34. Brand CI, Fontana RT. Biossegurança na perspectiva da equipe de enfermagem de unidades de tratamento intensivo. *RevBrasEnferm*. 2014;67(1):78-84.
35. Cardoso ACM, Figueiredo RM. Situações de risco biológico presentes na assistência de enfermagem nas unidades de saúde da família (USF). *RevLatAmEnferm*. 2010;18(3):73-8.
36. Machado MRM, Machado FA. Acidentes com material biológicos em trabalhadores de enfermagem do hospital geral de Palmas. *RevBras Saúde Ocup*. 2011;36(124):274-81.
37. Lapa AT, Silva JM, Spindola T. A ocorrência de acidentes por material perfurocortante entre trabalhadores de enfermagem intensivista. *RevEnferm UERJ*. 2012;20(1):642-7.
38. Amaro AS Júnior, Custódio JMO, Rodrigues VPS, Nascimento JMO. Risco biológico no contexto da prática de enfermagem: uma análise de situações favorecedoras. *RevEpidemiolControlInfecç*. 2015;5(1):42-6.
39. Costa ECL, Sepúlveda GS. Equipamentos de proteção individual: percepção da equipe de enfermagem quanto ao uso. *RevEnferm UFPI*. 2013;2(4):72-7.
40. Nogueira LS, Ferretti-Rebustini REL, Poveda VB, Gengo e Silva RC, Barbosa RL, Oliveira EM, et al. Carga de trabalho de enfermagem: preditor de infecção relacionada à assistência à saúde na terapia intensiva? *RevEscEnferm USP*. 2015;49(esp):36-42.
41. Ribeiro J, Rocha LP, Pimpão FD, Porto AR, Thofern MB. Implicações do ambiente no desenvolvimento do processo de trabalho da enfermagem: uma revisão integrativa. *EnfermGlob*. 2012;11(3):386-96.
42. Pol P, Zarpellon LD, Matia G. Fatores de (in) satisfação no trabalho da equipe de enfermagem em unidade de terapia intensiva pediátrica. *CogitareEnferm*. 2014;19(1):63-70.
43. Metello FC, Valente GSC. A importância de medidas de biossegurança como prevenção de acidentes do trabalho através da identificação de

- riscos biológicos no mapa de risco. *RevPesquiCuid Fundam.* 2012;4(3):2338-48.
44. Gallas SR, Fontana RT. Biossegurança e a enfermagem nos cuidados clínicos: contribuições para a saúde do trabalhador. *RevBrasEnferm.* 2010;63(5):786-92.
45. Valle ARMC, Moura MEB, Fernandes MA, Santos LCS. Aspectos históricos, conceituais, legislativos e normativos da biossegurança. *RevEnferm UFPI.* 2012;1(1):64-70.
46. Lacerda MKS, Souza SCO, Soares DM, Silveira BRM, Lopes JR. Precauções padrão e precauções baseadas na transmissão de doenças: revisão de literatura. *RevEpidemiolControlInfecç.* 2014;4(4):254-59.