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EXPOSURE TO BIOLOGICAL MATERIAL: CONSEQUENCES FOR NURSING PROFESSIONALS[1]

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ABSTRACT
Occupational exposure to biological materials has generated important problems for the nursing staff. This study analyzed the occupational exposure of the nursing staff to biological workloads and consequences. It is a descriptive exploratory study, with qualitative approach, designed in the framework of social determination. It was developed in five teaching hospitals in five different regions of Brazil. The population consisted of 3,147 nursing professionals who participated in data collection in a focus group of 62 subjects who answered the study guiding questions. The speeches were transcribed and submitted to thematic analysis, evidencing the categories exposure to biological workloads and strain processes. Results showed that nursing professionals are exposed to biological materials while performing their everyday work activities and this exposure is enhanced by the interaction of the psychological workloads. The strain processes referred to infections, contagious and parasitic diseases, stress, concern and anxiety. This study showed the potentials to improve the working conditions of nursing professionals through the articulation of strategies to promote their health and quality of life.

Keywords: Nursing. Occupational Hazards. Exposure to Biological Agents. Health Worker.

INTRODUCTION

Health professionals are affected by various health problems related to their work, due to exposure to the risks and burdens inherent in the profession. The health care assistance, in the perspective of historical-social conception of the health-disease process comprises a variety of burdens in the work process, which are generators of the wear and tear that configure the morbidity profile of this group[1].

Studies[1-4] identified the occupational exposure of nursing workers through different workloads. *Biological* burdens, due to contact with pathogenic microorganisms, resulting from contact with patients, contaminated materials and small vermin; *physical* loadsdue tophysical agents such as noise, humidity, inadequate lighting, sudden temperature changes, ionizing radiation, electricity; *chemical* loads, due to contact with chemicals such as medicines, antiseptics, disinfectants, sterilizing agents; *mechanical* loads, continuity solutions in skin and mucous membranes, resulting from contact with sharp materials, falls, grips, bruises and fractures; *physiological* loads, due to physical manifestations resulting from handling excessive weight, working standing up, inappropriate positioning, shift and night work; and *psychological* loads, arising from the constant attention of the worker, strict supervision, fast work pace, monotonous and repetitive work, women's work, communication difficulties, fatigue, tension, stress, dissatisfaction and situations that lead to the consumption of alcohol and drugs.

In health services, especially in hospitals, exposure to biological loads arise predominantly from accidents with sharp materials containing potentially contaminated biological fluids, which favor the development of infectious diseases[5]. Among the nursing staff, this exposure refers to a morbidity profile in which infectious and contagious diseases are prevalent.

Much of this occupational exposure can be avoided by adhering to the measures recommended by the Ministry of Health[6]. However, despite the

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knowledge of such recommendations, health professionals do not always adopt them effectively in their everyday practice, which, in part, comes from a feeling of invulnerability and a heavy workload.

For the prevention of exposure to biological loads in the workplace, recognition of working conditions is necessary, such as the means of exposure, preventive measures, knowledge of relevant legislation, as well as proper management and continuous education programs[2]. At the national level, the Ministry of Labor and the Ministry of Health have articulated to oversee the implementation of a Regulatory Norm (NR32) in health institutions, which provides safety and health measures for professionals in these institutions, with their observance being the responsibility of the employer[7].

Aligning themselves with national policies, institutions must invest in health surveillance initiatives for employees, allowing the recognition of the risks and burdens present in the workplace to which employees are exposed in their daily routine, making them active subjects in prevention.

For this purpose, the diagnosis of situations of occupational exposure is of fundamental importance, which allows the creation of a common monitoring system of multiple contexts, intended to support interventions that reduce exposure and the wear and tear generated.

In this light, the present study is aimed at analyzing the exposure of nursing employees to biological loads and their consequences, translated as processes of wear and tear.

METHOD

The study, conducted from the perspective of social determination, is characterized as descriptive, exploratory, using a qualitative approach[8]. It was conducted in five public teaching hospitals, elected in the north (NTH), northeast (NETH), midwest (MTH), southeast (SETH) and south (STH) regions, according to the criteria of representation, size (large and extra-large), infrastructure, and also the institutional consent to participate in research.

The study population consisted of 3,471 nursing professionals, representatives from the five settings selected. The purposive sample consisted of 62 subjects of both sexes, representatives of the different categories (nurses, technicians and nursing assistants), work units and shifts, and who accepted voluntarily to participate. Prior to data collection, approval for the study was obtained by the Research Ethics Committee at the School of Nursing, University of São Paulo, under protocol no. 339/2003/CEP/EEUSP.

Data were collected by means of a focus group technique, between 2005 and 2006, inthree meetings held in each hospital. Professionals working in all units of the hospitals were invited to participate in the study by means of a letter sent to management department. Each group had, on average, 12 participants, who were told about the proposal of the study, and the distribution of activities. The voluntary participation of subjects was formalized by signing the informed consent form, in accordance with resolution 196/96 of the National Health Council.

During the meetings, subjects participated in the group discussion, directed by the guiding questions: "Which biological loads do you consider yourself exposed to in your work? In which activities does this exposure take place? How do these loads affect your health?"

This information was validated with other workers and a self-referral questionnaire was registered in the collective survey, with questions regarding the work process, workloads and wear and tear processes generated. The survey was thus used as an auxiliary instrument to record the data.

The meetings were filmed and the speeches were transcribed integrally and subsequently subjected to thematic analysis[9]. The qualitative data were then grouped into the previously defined categories: *exposure to biological workloads* and *wear and tear processes*.

RESULTS AND DISCUSSION

To understand the categories proposed in this study, an approach to the work process in the settings is necessary, as the context and the way the nursing work is organized influence in determining the health-disease process and the forms of occupational exposure of the worker.

> Here we take care of the patients, you know... children, the elderly [...] (G1)

> We take care of patients with tuberculosis in the MI.

The statements show that the object of nursing work is essentially the care provided to patients in different hospitals units, with varying levels of complexity, and this is expressed by the interaction between patients and professionals. Despite the specifics in the assistance provided in the settings, the nursing work has been described with similarities, particularly among technicians and assistants.

The expression of the subjects as regards the means and instruments used in the transformation of the work objective, during working activities, converged in the same direction, characterized by predominantly manual labor, with limited use of hard technologies, but with high standards of expertise.

> We use syringes, needles, forceps, material for dressings, equipment.

The workforce was identified as the primary means of achieving care, involving health and nursing professionals. Some statements stressed the singularities of some sectors, which involve the use of more precise equipment, that optimize the work, but also require constant supervision and attention during their control.

During the description of the work process, the participants emphasized the heavy workload, the intensified pace, the small number of professionals and low remuneration. As a result of the context of job dissatisfaction, complementary activities are undertaken to improve the family income, with multiple jobs being common - two, three, four and even five different jobs.

The recognition of the inherent characteristics of the work process is essential to understand its influence on the health worker, especially on issues related to occupational exposure. The findings of this study are consistent with those of other studies which showed the work of nursing as tiring and permeated by processes which are unfavorable to the health and quality of life of the professional[2;4].

Based on the work context of each setting, subjects made their analysis of previously defined categories, as shown below.

Exposure to biological workloads

Exposure to biological loads in the workplace was a consensus among the nursing staff, appearing in every statement as a relatively common event in the daily work.

> The hard part is when we do not know the diagnosis of the patients. They enter through the emergency room [...] and when you go and see, they have TB, they are HIV positive [...] and you did not use PPE. (G1)

> Do you remember the lady who you took care of the other day? [...] she has hepatitis B.

The *handling of patients* with infectious or parasitic diseases was the form of occupational exposure to biological material more frequently reported by participants during the delivery of nursing care. The possibility of contact with body fluids, secretions or continuity solution was highlighted in direct contact with patients; in invasive procedures, such as with venipuncture, catheterization, aspiration of secretions; in the execution of dressing wounds, bed baths and cleaning patients as regards their physiological needs.

> It happens more often than you think... ah, this patient does not have anything... and you do not wear a mask, a cloak [...] Other times, you do not use PPE because the Ministry of Health recommends masks with a certain thickness and you know this one is not available [...] so you do not use it, also because sometimes it's a rush and you do not even remember the mask.

The participants stressed that, even recognizing the importance of the use of personal protective equipment while performing nursing care, they often neglected this act of self-protection, being even more at risk. This behavior is also favored, according to the findings, by the heavy workload, lack of time, material and the profile of activities performed, which include procedures that facilitate exposure, such as bathing, changing beds, transfers, punctures, aspirations and preparation for examinations. Also, the participants recognize that the equipment available is not what is recommended.

Non-adherence to the use of personal protective equipment is recurrent in nursing and has been broadly explored in scientific literature in an attempt to understand the reasons which favor this behavior[3,10-12]. In addition, especially in the northern region, the lack of personal protective equipment was verified.

> Sometimes you're collecting the sheets [...] when you least expect it there is a needle lost there [...] and you are unprotected. There are both things...

both inappropriate material and lack of the habit of protecting oneself.

The stores do not dispense the actual amount of material we need to work [...] and so there is a lack of gloves.

A second issue that has emerged within this category was the exposure to biological load by means of *handling contaminated materials*, either during or after patient care. Participants emphasized the improper handling of sharp materials, especially needles; cleaning and washing of materials and utensils used by the patient and the handling of materials and specific equipment while performing or assisting in procedures.

Being pricked by the patient's needle, when removing [...] she even ended up with depression because she had to do a follow up.

I have even pricked myself with a needle. My friend was passing by with a child... she pulled it... I do not know what happened... and immediately the needle entered my finger... there I was [...] it was hard [...] with the pregnancy and everything [...] but thank God, nothing came of it.

Several studies have examined the exposure of nursing personnel to biological loads at work and the most varied consequences generated by this situation, especially related to accidents at work with sharp materials[12-14]. These studies emphasize the importance of adopting preventive and educational measures among this population, in order to avoid the occurrence of accidents and thus prevent contamination of the professional. A third form of occupational exposure to biological agents cited by the subjects was the contact with small animals that can transmit diseases such as ants, roaches, spiders, rats and mosquitoes.

There were problems in the ceiling... the nurse went there to see [...] and the fleas stung her legs [...] they were all swollen. Here there are roaches and ants.

This week I saw a rat that looked like a… [...] There are mosquitoes that are infected with yellow fever [...] but there are more with dengue [...] my colleagues got dengue here at the hospital [...] they bring the mosquito from outside into the hospital and there is also Malaria here!

I went to take the examination to the laboratory and the yard was full of water... it had rained... I caught leptospirosis [...] in the drains [...] there are rats...

This exposure was associated with the improper storage of food, the deficiency in the cleaning at the units and in the cafeteria, which favors the appearance of these animals, and the accumulation of stagnant water and garbage near the workplace.

Wear and tear processes

The occupational exposure to biological loads are reflected by wear and tear processes, reported by the subjects, manifested by health complaints, signs, symptoms, or even some diseases.

We have seen so many people sneezing in these clinics [...] my God [...] too many runny noses , sore throats, [...] respiratory infections.

There are many patients with herpes [...] this year alone there have been three employees away from work with herpes.

Here we use air conditioning a lot because of the heat.

One of my colleagues had hepatitis and another had TB.

As a result of the handling of patients with infectious or parasitic diseases, as well as contaminated materials, subjects reported illnesses such as tonsillitis, sinusitis, otitis, laryngitis, tuberculosis, leprosy, hepatitis, herpes, bronchitis, colds and urinary tract infections. Some participants reported having gone through this experience, while others said they knew someone, in their area, who had suffered with these conditions.

As a consequence of exposure to small animals, the NTH professionals mentioned diseases like malaria and dengue, possibly because it is an endemic region for such diseases. The NETH professionals mentioned, besides dengue, leptospirosis, since they are exposed to rainwater on the paths between the pavilions of the hospital. Although these diseases have been related to the work environment, studies in literature associating them to work in the health environment, were not found.

Pain was reported as a result of accidents with sharp materials and itching from contact with small animals present in the workplace, especially ants and mosquitoes.

The speeches also pointed out the psychological overload resulting from stress, anxiety, fear and concern regarding infections, especially those caused by the human immunodeficiency virus and

hepatitis B, and multi-resistant bacteria. These feelings are exacerbated by the possibility of transmitting the disease to family and friends.

The wait for tests and serology results was also indicated by the subject as a period of profound suffering, introspection and anxiety.

These situations reveal a relationship quite common in nursing, in which exposure to a biological workload enhances the exposure to psychological burdens, which are expressed by reports of insecurity, anxiety, fear, despair, guilt, stress and mental distress[4;12-15].

In contrast, the prevalence of mental burdens, such as the accelerated pace of the work, strict supervision, stress, and lack of motivation and attention may contribute to exposure to biological loads due to high demands and service requirements.

The risk of exposure to biological fluids is directly related to working conditions. The institution should offer the means to provide workplace safety and workers, in turn, should comply with the recommendations set forth institutionally and by the Ministry of Health.

Brazilian[3,13,15] studies with nursing professionals who had accidents with potentially contaminated biological materials show that most of these do not meet the recommended protocols by legislation[6] - a fact which increases the possibility of infection by pathogens.

Another study, performed in the surgical unit of a teaching hospital, noted that health workers underestimate the relevance of these accidents. Many of them do not realize the notification and are unaware of the routine protocol after the accident[11].

International and national studies indicate a high prevalence of infection with the hepatitis B virus among health professionals, especially because only a small percentage of workers complete the immunization scheme[16-19].

Therefore, in different situations, studies show that occupational exposure and consequent health problems among nursing professionals are triggered by the way in which they are inserted in the provision of health services and, especially, by the way work is organized. This implies the need to rethink the organization of the work and implement strategies that can effectively change this reality[15;18-20].

It is worth mentioning that the approach of occupational exposure is an essential part of regulatory policies, effective through continuous education programs, in order to minimize the risk of transmission of disease in patients and health professionals.

Thus, this study corroborates with others regarding the need to redirect nursing management in order to understand health professionals and implement improvements for health promotion in the workplace, enhancing educational programs that reinforce the adoption and monitoring of prevention recommendations for all healthcare workers.

FINAL CONSIDERATIONS

This study demonstrated the occupational exposure of nursing professionals to biological loads and their consequences, showing that health problems arise from the organization of the work and the way workers are included in the health care process. Therefore, it points to the need to rethink the ways of work organization and strategies that can change this reality.

It reflects the importance of the subject, as it brings to the professional a perspective of the experiences and suffering with occupational exposure, reinforcing that education and intervention measures should be implemented.

Furthermore, the results allow the support for proposals of health surveillance for professionals, who should be included as co-participants in the surveillance of their own health and that of other professionals as well; constituting, therefore, an indicator in the monitoring of the exposure as regards biological loads.

EXPOSIÇÃO AO MATERIAL BIOLÓGICO: CONSEQUÊNCIAS PARA OS PROFISSIONAIS DE ENFERMAGEM

RESUMO

A exposição ocupacional a materiais biológicos tem gerado importantes problemas de saúde aos trabalhadores de enfermagem. Este estudo analisou a exposição ocupacional dos trabalhares de enfermagem às cargas biológicas e suas consequências. Trata-se de um estudo descritivo exploratório, de abordagem qualitativa, concebido no referencial da determinação social. Foi desenvolvido em cinco hospitais universitários, nas cinco

diferentes regiões do Brasil. A população foi composta por 3.147 trabalhadores de enfermagem e participaram da coleta de dados, em grupo focal, uma amostra de 62 sujeitos que responderam às questões norteadoras. As falas foram transcritas e submetidas à análise temática, sendo evidenciadas as categorias exposição às cargas biológicas de trabalho e processos de desgaste. Os resultados demonstraram que os profissionais de enfermagem estão expostos aos materiais biológicos durante a execução de suas atividades laborais corriqueiras e que esta exposição é potencializada pela interação com as cargas psíquicas. Os processos de desgaste referidos foram as infecções, doenças infectocontagiosas e parasitárias, estresse, preocupação e ansiedade. Este estudo demonstrou potencialidades de melhorias das condições de trabalho por meio da articulação das estratégias para promoção da saúde e qualidade de vida dos profissionais de enfermagem.

Palavras-chave: Enfermagem. Riscos Ocupacionais. Exposição a Agentes Biológicos. Saúde do Trabalhador.

EXPOSICIÓN AL MATERIAL BIOLÓGICO: CONSECUENCIAS PARA LOS PROFESIONALES DE ENFERMERÍA

RESUMEN

La exposición laboral a materiales biológicos ha generado importantes problemas de salud a los trabajadores de enfermería. Este estudio analizó la exposición laboral de los trabajadores de enfermería a las cargas biológicas y sus consecuencias. Se trata de un estudio descriptivo, exploratorio, de abordaje cualitativo, concebido según referencial de la determinación social. Fue desarrollado en cinco hospitales universitarios, en las cinco diferentes regiones de Brasil. La población fue compuesta por 3.147 trabajadores de enfermería y participaron de la recolección de datos, en grupo focal, una muestra de 62 sujetos que respondieron a las cuestiones orientadoras. Los testimonios fueron transcriptos y sometidos al análisis temático, surgiendo las categorías exposición a las cargas biológicas de trabajo y procesos de desgaste. Los resultados demostraron que los profesionales de enfermería están expuestos a los materiales biológicos durante la ejecución de sus actividades laborales habituales y que esta exposición es potencializada por la interacción con las cargas psíquicas. Los procesos de desgaste referidos fueron las infecciones, enfermedades infectocontagiosas y parasitarias, estrés, preocupación y ansiedad. Este estudio demostró posibilidades de mejorar las condiciones laborales por medio de la articulación de las estrategias para la promoción de la salud y calidad de vida de los profesionales de enfermería.

Palabras clave: Enfermería. Riesgos Laborales. Exposición a Agentes Biológicos. Salud del Trabajador.

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