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ORIGINAL ARTICLE

WORKER'S HEALTH IN THE CHEMOTHERAPY SECTOR: OCCUPATIONAL RISKS IN THE MANAGEMENT OF CHEMOTHERAPEUTICS

A SAÚDE DO TRABALHADOR NO SETOR DE QUIMIOTERAPIA: RISCOS OCUPACIONAIS NO MANEJO DOS QUIMIOTERÁPICOS

LA SALUD DEL TRABAJADOR EN EL SECTOR DE QUIMIOTERAPIA: LOS RIESGOS PROFESIONALES EN LA GESTIÓN DE DROGAS QUIMIOTERAPÉUTICAS

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ABSTRACT

Objective: identifying the occupational risk factors that health professionals are exposed to, in the management of chemotherapy. ***Methodology:*** an exploratory and descriptive study of a quantitative approach, performed with nurses and nursing technicians who work in the chemotherapy sector in a hospital institution of public character located in the city of Campina Grande/PB, through the application of a semi-structured questionnaire, from October to November 2012. Data were analyzed using descriptive statistical procedures, using Microsoft Excel software. ***Results:*** work in the chemotherapy sector offers professionals a greater exposure to occupational risks, leaving them more vulnerable to diseases. ***Conclusion:*** professionals know the risk factors they are exposed to in the sector; however, it is necessary to increase alertness and provide more training to professionals of this sector. ***Descriptors:*** Health; Work; Nursing.

RESUMO

***Objetivo*:** identificar os fatores de riscos ocupacionais que os profissionais de saúde estão expostos no manejo dos quimioterápicos. ***Metodologia*:** estudo exploratório e descritivo, com abordagem quantitativa, realizado com enfermeiros e técnicos de enfermagem que trabalham no setor de quimioterapia, em uma instituição hospitalar de caráter público localizado na cidade de Campina Grande/PB, por meio da aplicação de um questionário semiestruturado, de outubro a novembro de 2012. Os dados foram analisados a partir de procedimentos estatísticos descritivos, utilizando-se do software Microsoft Excel. ***Resultados*:** o trabalho no setor de quimioterapia oferece aos profissionais uma maior exposição aos riscos ocupacionais, deixando-os mais vulneráveis ao adoecimento. ***Conclusão*:** os profissionais conhecem os fatores de riscos que estão expostos no setor, porém, é necessário aumentar a vigilância e oferecer mais treinamentos aos profissionais deste setor. ***Descritores*:** Saúde; Trabalho; Enfermagem.

RESUMEN

Objetivo: identificar los factores de riesgos ocupacionales en que los profesionales de la salud están expuestos en la gestión de la quimioterapia. ***Metodología:*** estudio exploratorio y descriptivo, con enfoque cuantitativo, realizado con enfermeras y técnicos de enfermería que trabajan en la industria de la quimioterapia en una institución hospitalaria de carácter público situado en la ciudad de Campina Grande/PB, a través de la aplicación de un cuestionario semi-estructurado, en octubre-noviembre de 2012. Los datos fueron analizados utilizando procedimientos estadísticos descriptivos, utilizando el software Microsoft Excel. ***Resultados:*** el trabajo en el sector de la quimioterapia ofrece a los profesionales una mayor exposición a los riesgos laborales, lo que les deja más vulnerables a las enfermedades. ***Conclusión:*** los profesionales conocen los factores de riesgo a que están expuestos en el sector. Sin embargo, es necesario aumentar el estado de alerta y proporcionar más capacitación a los profesionales de este sector. ***Descriptores:*** Salud; Trabajo; Enfermería.

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INTRODUCTION

Chemotherapy is among the therapeutic modalities, which favors higher incidence of cure of various tumors including the most advanced, and increase the survival of patients with cancer. In the treatment chemicals are used which interfere in the process of growth and cell division, and may be used either alone or in combination with surgery or radiotherapy in order to eliminate tumor cells. They are administered by the oral, intramuscular, subcutaneous, intravenous, intra-arterial, intrathecal, intraperitoneal, intravesical, topical, and intrarectal application, being the most used intravenous.[1]

Chemotherapeutic does not act peculiarly under the neoplastic cells, and may even injure normal cells, whose action is initiated under cell cycle process that leads to cell division.[2] Normal cells undergo the same process of dividing neoplastic cells; however, what differentiates one from the other is that in normal tissues production takes place to meet the organic requirements and the cancer grow wildly.

Chemotherapy is a treatment where drugs that are used when it is administered continuously or at regular intervals fall into the bloodstream and are transported to all parts of the body, causing various undesirable side-effects: nausea, alopecia, fatigue, anemia.[3]

Thus the patient undergoing chemotherapy is the health care team that monitors all vital signs and clinical symptoms in order to minimize complications. However, attention to the patient and unhealthy working environment can leave workers exposed to risks.

The Occupational Health emerged from the struggle of the workers for the right to health and better working conditions.[4] It composes an area that encompasses the work of a multidisciplinary and multi-professional team, which aim to analyze and intervene in the relationship between work and the health-disease. It is also important to integrate the experience and knowledge of workers in this health-disease process, improving decision making and working conditions thereof.

The work done in the hospital is the place that most exposes professionals to risk factors, which help the emergence of industrial accidents. These risk factors include psychosocial, chemical, physical, mechanical, biological and ergonomic; however, they are not the only ones. There are also other ways that lead us to an accident at work: lack of training, inexperience, fatigue, emotional imbalance, double shifts.[5]

There are defined as risk factors as media or environments which relate with each other and the body of the professional, causing adaptation processes which results in wear, understand this as a loss of mental capacity or body.[6,7] These factors, The intensity of the event depends on the organization of work, are divided into: External materiality to the worker's body which include chemical, biological, physical and mechanical loads; and materiality in the human body involving the physiological and psychological burdens.[7]

Contributing to a better understanding, we can distinguish these terms as follows: chemical loads include disinfectants, antibiotics, chemotherapeutic agents, gases; organic fillers include contact with parasites, bacteria, viruses, fungi; the physical loads are areas with poor lighting, noise, inadequate ventilation; mechanical loads span harsh environments; physiological come from physical exertion, visual, difficult postures, excessive hours of work and, finally, the psychic loads that include the pace and intensity of work.[8]

Regarding the professionals who handle antineoplastic, as some studies show cases of appearance of secondary tumors and a greater chance of appearance of cancer, mutagenicity, genetic changes, changes in the menstrual cycle, occurrence of miscarriage, congenital malformations.[3,9,10] In addition, these professionals can present some types of side effects are dizziness, infertility, headache, allergic reactions, dizziness and vomiting that will depend on the degree and duration of exposure to these drugs.

This is due to the risk that these workers are exposed to during the preparation, administration and disposal of antineoplastic agents which can be absorbed into the body through the skin tract, respiratory, digestive and mucous.[11,10]

The legislation specifically dealing with the health and safety of workers in the health field is the Regulation Standard NR 32. This standard encompasses some key points that are mentioned medicines and drugs considered at risk, which are included those can cause genotoxicity, carcinogenicity, teratogenicity and serious toxicity and selective on organs and systems; the preparation of these drugs should be performed in restricted environment and accessible only to the professionals involved; personal protective equipment - PPE must be in perfect condition and in the event of contamination or damage, replace them

immediately; also focuses on the existence of two types of accidents: the environmental and personal and lastly the Regulation Standard NR 32 reports that workers should receive initial and continuous training, obtaining thus more empowered and insurance professionals. This training should be given by health professionals who recognize the risks inherent in anticancer chemotherapy.[12]

Thus, this study aims to:

- Identifying the occupational risk factors that health professionals are exposed to in the management of chemotherapy.

METHOD

It is na exploratory and descriptive study with a quantitative approach[13-14], held in a hospital institution of public character located in the city of Campina Grande, PB. The sample consisted of nurses and nursing technicians who work in Chemotherapy sector, totaling 11 participants. There were as inclusion criteria being the age of 18, take part in the study voluntarily, have experience in more than six months of chemotherapy sector and signed the Informed Consent - IC.

Data collection was started after authorization of the institution and, consequently, approval of the project by the Ethics Committee of the State University of Paraiba (UEPB) under CAAE: 0302.0.133.000-12. Data collection was performed using a semi-structured questionnaire divided into demographic data and data on the work in the chemotherapy sector, containing subjective and objective questions, totaling 20 questions. There was performed a descriptive statistical analysis using Microsoft Excel software.

Scraps of participants' responses were identified by a capital letter of the alphabet, in order to maintain the anonymity of the same. The survey was completed based on the ethical principles recommended by Resolution 466/12 approving guidelines and regulatory standards for research involving human beings.[15]

RESULTS

The study had the participation of 11 professionals from the nursing team working in the chemotherapy sector, and 05 (46%) nurses and 6 (54%) nursing technicians. About gender, 100% are female.

The study population was aged between 28 and 49. Of these, 5 (45%) are single, 1 (10%) divorced and 5 (45%) married. Eight (73%) of them have children and 3 (27%) do not. The survey participants have a professional practice time of at least one year and four months and being no more than 27 years old.

Regarding the education level, the six nursing technicians, 2 (33%) have mid-level assignments and 4 (67%) have completed higher level, an increase in the number of qualified professionals in search of the need to enrich the knowledge in healthcare, encouraging them scientific knowledge and professional growth; however, continue to exert mid-level tasks.

Discussing the higher level 5 (45%) of participants are graded and act as a nurse in the researched sector, of these only three have graduate degrees.

Over 50% of these professionals reported that started their activities in this sector by necessity of the institution. As regards the achievement of chemotherapeutic procedures, it was found that each business actor is responsible for four patients in each shift totaling twenty patients per week. Regarding the number of professionals who work in this sector, 73% of them consider to be sufficient to provide good care to those patients who need this service. On the other hand 27% believe that the number of professionals is insufficient justified in the following reports:

> *Insufficient to attend the needs of the patients.* (P-4)
>
> *Why should have two nurses; a housekeeper (bureaucratic) and another attending physician (assistance).* (P-8)
>
> *The demand is great. (E-11)*

To identify the occupational risks that health professionals are exposed to chemotherapy sector, we obtained the following results shown in Figure 1:

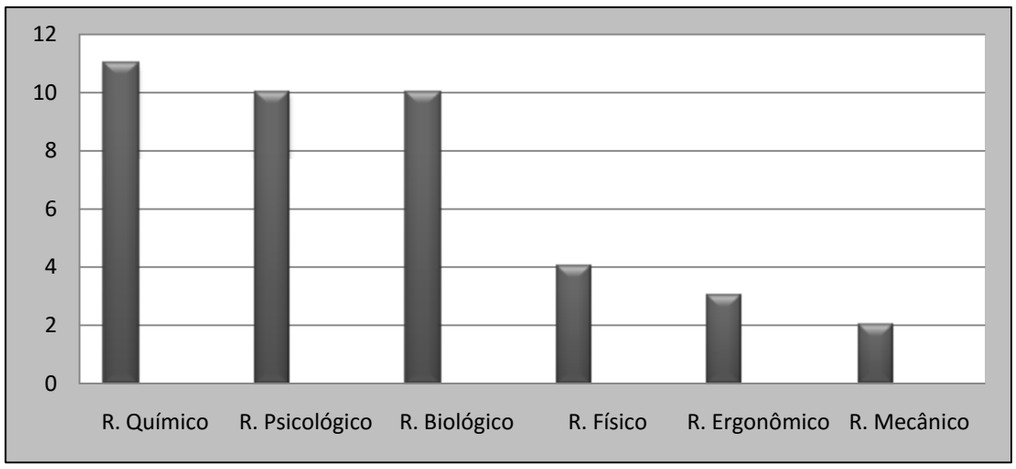

Figure 1. Distribution of risks that the professionals are exposed in the chemotherapy.

Exemplifying each above-mentioned risk: chemical risk - medication; psychological risk - physical and mental exhaustion; biohazard - micro-organisms; physical risk - noise, bad lighting; ergonomic risk - Intense physical exertion, extension of working hours and the mechanical risk - unfavorable environments.[11]

This result gives rise to the reflection that health professionals must exercise its powers in accordance with established standards and mainly responsibly in order to prevent occupational accidents. Because of this vulnerability and being asked about safety in the workplace, 8 participants (73%) feel unsafe work environment and 3 (27%) feel safe in the workplace, being proven by some following reports:

> *No, due to exposure to biological and chemical agents. (P-2)*
>
> *No, because of potential drugs. (P-3)*
>
> *No, need better structure and training. (P-4)*
>
> *No. Because at the moment we are working on an improvised place [emphasis of the subject]. (P-1)*
>
> *Yes, because I like what I do and I feel good to help. (P-5)*
>
> *Yes, because we have enough PPE materials. (P-7)*

Even with all these risks, it was observed that when asked about accidents at work only 18% (2) reported some type of accident, according to the following reports:

> *A drop of organic matter in the eye, there was reported epidemiology, consultation, examination (infectious diseases). (P-9)*
>
> *With the patients' blood, washed immediately with soap and water. (P-11)*

On the other hand, 82% (09) do not explain any accident; there was no need for sick leave or clearance and 100% of the participants do not have, to date, no occupational disease.

To verify if health professionals have received specific training to work in the chemotherapy industry, it is concluded that 90% of participants did not have any training or information of that sector before starting their activities. Segiomtes lines fall under the opinions of the participants:

> *Only after training had been working in the sector. (P-1)*
>
> *We were requested by the need of the sector, we spent one month in observing sector. (P-4)*
>
> *Because the institution did not offer me any training for this, I had to find alone. (P-6)*
>
> *The same percentage (90%) was found when participants were asked about their participation in periodic training. One participant explained that:*
>
> *Is not offered, I seek in literature. (P-11)*

In the research institution we noted that 63% of participants were asked to perform laboratory tests and 37% reported having received no such guidance. Of the total sample, 81% regularly perform the tests and only 18% do not realize it.

Regarding bio-security standards and occupational risks to which they are exposed in the sector, 54% reported that there was no guidance and 46% reported having received information. Resolution of the Collegiate Board of Directors RDC No. 220 of 2004 established that the professionals involved at some stage of the process should participate in initial and continuing education programs in order to ensure training and updating of professionals[16]. According to Regulation Standard NR 32 the obligation to promote training, initial and continuing workers for safe handling of chemicals is the employer.[12]

When asked the participants, who is responsible for the preparation and administration of chemotherapy, it was obtained as a result, values shown in Table 1:

Table 1. Distribution of Likely Professionals Responsible for the Preparation and Administration of Chemotherapeutic Drugs in Chemotherapy.

Professionals Responsible	Preparation and Administration n=11	
	n	%
Nurse	02	18%
Biochemist	05	45%
Nursing Technician and Biochemist	02	18%
Nurse and Biochemist	02	18%
Total	11	99%

Before the data, most professionals refer that the staging function and administration of chemotherapy is obligatory on biochemists. By COFEN Resolution 257/01 it is authorized to nurse the preparation of chemotherapy only in the absence of biochemical.[17]

DISCUSSION

According to literature, even empirically, it was up to women to care for the sick, injured and elderly, besides taking care of housing and children. Because of this, it was believed that women were naturally already prepared to exercise those care assignments, perpetuating to the present day.[18,19]

The scientific expertise that these professionals acquire during the academic experience makes them able to take to manage a sector. However, the nurse who works in the chemotherapy sector needs to broaden and deepen their knowledge in a specific way on chemotherapy, adverse reactions, side effects and especially pharmacology.[11] Assignments in this category are more complex, such as exhibits.[20]

- ✓ Provide antineoplastic chemotherapy as pharmacokinetics of the drug and therapeutic protocol.
- ✓ Punching the totally implanted central catheter (PORT) of patients who make use of it; heparinize and perform the dressing after completion of QA infusion through this access.
- ✓ Establish technical-scientific relations with related units, developing investigative and research studies.
- ✓ Participating in the development of internship programs, training and development of nursing professionals at different levels of training, on the area of operation.

The time of performance of these professionals in the health area, specifically in chemotherapy sector ranged from one year and four months to nine years. The data allows us to observe that these professionals have a longer experience of professional study [19], where his research found an operating time equal to or less than a year.

The term working day is defined as an indication of time devoted by nursing staff to each patient, ie, the amount of hours worked by workers in certain function. The working hours of nursing staff at the research institution chemotherapy sector obey shifts of six hours in the day shifts and twelve hours on night shifts with rest forty-eight hours from Monday to Friday, corresponding to 30 hours per week. But some professionals use the hours of rest for bending schedules or perform other functions in other institutions in an attempt to improve their income.

In the quantitative professionals, the COFEN Resolution 293/0420 establishes rules for the minimum quantitative scale of nursing professional staff in medical clinics of health institutions in order to provide good healthcare coverage. Also reports that for specialized units such as psychiatry and oncology, should classify the customer building on the specific assistance features, adapting them to the patient classification system, making it more coherent and satisfactory design.

The hospital environment favors the professional space of several critical sectors, where it should have a meticulous care in their assignments and in some sectors these factors are more evident. Regarding the definition of risk factors in the authors' [6,7] it can be understood as means or environments that relate to each other and to the professional body, causing wear to the health worker in a generalized way.

Exposures to occupational dangers occur both through direct contact, which is represented by the skin, mucous membranes or by inhalation and indirect contact, ie through body sweat fluid, blood, customer vomiting within 48h/72h after administration drug and food consumption contaminated.[18,9,21]

Another issue to be informed in training or skills is the importance of carrying out laboratory tests, since these comprise the main form of prevention and early detection of occupational diseases. Depending on the degree of exposure of workers to occupational hazards and according to medical recommendations, these tests should be performed annually or periodically.[9]

The Resolution of the Collegiate Board of Directors RDC 220 of 2004 established that the professionals involved at some stage of the process should participate in initial and continuing education programs in order to ensure training and updating of professionals[16]. According to Regulation Standard NR 32 the obligation to promote training, initial and continuing workers for safe handling of chemicals is the employer.[12]

CONCLUSION

Nursing professionals of the chemotherapy sector, handling chemotherapy are exposed to all occupational risks, the most cited risk chemical and biological. We also note that there is no full realization of periodic laboratory tests, the institution does not supervise effectively form such action, so it does not provide continuing education to professionals in the prevention of occupational accidents.

Professionals have not received training to train the provision of their services, and nursing technicians who have the top level in their area sought from its own resources to improve the provision of specialized services in oncology. Any accident at work, occupational disease or issue of sick leave was not reported.

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