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Homes for Elderly People: Professionals' Exposure to Physical Hazards

Institutos de Longa Permanência de Idosos: Exposição dos Profissionais aos Riscos Físicos

Hogares para Ancianos: Exposición de Profesionales a los Riesgos Físicos

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ABSTRACT

Objective: The study's purpose has been to investigate the exposure of professionals to the physical risks present in homes for the elderly people. **Methods:** It is both a descriptive-exploratory and a field study, which has a quantitative approach and cross-sectional design. Data collection took place using a checklist elaborated according to the requirements of the *RDCs* from the *ANVISA* No. 283/2005 and No. 50/2002. **Results:** The study field presents nonconformities to the standards established by the specific resolutions, then exposing health professionals to physical hazards, such as: furniture inadequate distribution, electric risk, humidity, high sound pressure levels, space inadequacy and high temperature, among others. **Conclusion:** The assessed Institution is not in compliance with the Legislation in force, thus showing the presence of physical hazards that might affect the health of workers and also compromise their work quality.

Descriptors: Occupational Risks, Occupational Exposure, Physical Contaminants, Homes for Elderly People.

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RESUMO

Objetivo: Averiguar a exposição dos profissionais de saúde aos riscos físicos presentes em um Instituto de Longa Permanecia de Idosos. **Métodos:** estudo descritivo-exploratório, de campo, com abordagem quantitativa e delineamento transversal utilizando-se um checklist elaborado conforme os requisitos das Resoluções da Diretoria Colegiada da ANVISA Nº 283/2005 e 50/2002. **Resultados:** O campo de estudo apresenta inconformidades frente aos padrões estabelecidos pelas resoluções específicas expondo os profissionais de saúde a riscos físicos, como: distribuição inadequada de mobiliários, choques elétricos, umidade, níveis elevados de pressão sonora, inadequação de espaço e temperatura elevada, entre outros. **Conclusão:** a Instituição avaliada não está em conformidade com a Legislação pertinente, sendo patente a presença de risco físicos que podem afetar a saúde dos trabalhadores e comprometer sua qualidade do trabalho.

Descritores: Riscos Ocupacionais, Exposição Ocupacional, Contaminantes Físicos, Instituição de Longa Permanência para Idosos.

RESUMEN

Objetivo: Averiguar la exposición de los trabajadores de la salud a riesgos físicos presentes en un hogar de ancianos. **Métodos:** estudio exploratorio descriptivo, de campo con un enfoque cuantitativo y de carácter transversal utilizando un inventario, preparado de conformidad con los requisitos de las resoluciones de la Junta Colegiada de ANVISA No. 283/2005 y 50/2002. **Resultados:** El campo de estudio tiene inadecuaciones frente a las normas establecidas por las resoluciones específicas exponiendo los trabajadores de salud a riesgos físicos, tales como: inadecuada distribución de los muebles descargas eléctricas, de humedad, de niveles de presión sonora, de falta de espacio y alta temperatura, entre otros. **Conclusión:** la institución estudiada no está de acuerdo con la legislación pertinente, y es evidente la presencia de riesgo físico que puede afectar la salud de los trabajadores y comprometer su calidad de trabajo.

Descriptores: Riesgos Laborales, Exposición Profesional, Contaminantes Físicos, Hogares para Ancianos.

INTRODUCTION

Nowadays, there is a change in the national scenario regarding distribution by age group, due to the aging of the population, thanks to the growth of life expectancy of the Brazilian, as well as the improvement in their quality of life, plus a change in eating habits, self-care and improvements in national health and infrastructure systems.

This change in the epidemiological spectrum, combined with family social and economic changes, has increased levels of institutionalization in several countries. Brazil is in favor of this process since the family is not always ready for aging, which increases the indices of institutionalization of the elderly, mainly due to the lack of family structure and the incipience of the government towards family support and the elderly.[1] As an aggravating factor to the increase in this index of institutionalization is the scarce structure of Homes for Elderly People, which may expose professionals to occupational risks. These risk agents, the focus of this study, can influence the health of the users of the service and of the professionals who perform their daily work activities.

Regulatory Norm No. 9 of the Brazilian Ministry of Labor, in the Program for the Prevention of Environmental Risks includes biological agents: bacteria, fungi, bacilli, parasites, protozoa, viruses, among others; physical agents: noises, vibrations, abnormal pressures, extreme temperatures, ionizing radiation, as well as ultrasound and infrasound; biological agents: dust, fumes, mist, mist, gas or vapor, by direct contact or being absorbed by the body through the skin or ingestion. The Pan American Health Organization also adds ergonomic agents due to bad posture, inadequate work place and furniture and others responsible for musculoskeletal disorders and psychosocial agents from conflicting relationships, monotony, excessive rhythm, among others.[2-3]

Reflecting and recognizing the complexity and the responsibility to offer integral and holistic assistance to the elderly, it is also essential to give the same attention to the professionals to carry out their activities in an environment with adequate working conditions and with the minimum possible risk. Considering this assertion associated with the real capacity of Homes for Elderly People, there is in Legislation in force, guidance for analysis of the structure and functioning of this type of Institution.[4-5] Through the general operating standards with six indicators of annual and mandatory notification for the evaluation of its performance and standard, the *Resolução de Diretoria Colegiada (RDC)* [Collegiate Directory Resolution] from the *Agência Nacional de Vigilância Sanitária (ANVISA)* [National Agency of Sanitary Surveillance] No. 283/2005 and No. 50/2002 are intended to avoid distancing between the minimum recommended by them and the actual conditions of full assistance offered by the institution.[4-5]

An environment with risk potential can cause adverse events to professionals, as well as users, such as fatigue, drowsiness, malaise, irritability, hearing fatigue, headache, low concentration, musculoskeletal trauma, insufficient lighting accidents or inadequate flooring, bruises and falls, explosions, fires and electric shock, among others.[6]

Due to the scarcity of specific literature on the subject, it seems worthwhile to infer that there is a need to draw attention to the risks to health professionals and users in the environment of Homes for Elderly People since there are there must also be rights to work in a safe environment.

Given the aforementioned, the study's aim was to investigate and identify possible sources of physical hazards that may cause adverse events to health professionals working in a Home for Elderly People, and then relating them to the *RDCs* from the *ANVISA* No. 283/2005 and No. 50/2002.[4-5]

METHODS

It is both a descriptive-exploratory and a field study, which has a quantitative approach and cross-sectional design. It is constituted of procedures of observation and measurement of physical aspects with a faithful record

of the phenomena and situational elements seeking their nature, composition and constituent processes, found in the field of research, including the study of unit-case.

The selection of the Home for Elderly People was due to the fact that it is the only one in operation in the studied municipality of the *Pará* State; being a private/philanthropic institution, active thirty-four (34) years ago; by the demand of elderly residents in it and also by the ease of access to the researchers. Although unique, it harbors numerous environmental features with potential physical hazards.

Because the research does not directly involve human beings and their emissions of values, nor their judgments, or opinions by any variable, it was not necessary approval in Ethics Committee, but only the approval signed by the administrators of Homes for Elderly People inherent in the field of study. It should be emphasized that the institutions were assured the right to withdraw from the research if they so wished, as well as the privacy and individuality of all those involved.

Data collection was carried out over the period from March to July 2015, by the following three stages: observation and mapping of the study field; technical drawing of the Home for Elderly People structural plan; and data collection procedure. In the observation phase, the procedures and routines performed by the professionals were followed up by caring for the elderly in the field of study, enabling a detailed knowledge of the activities developed there and allowing the recognition of the potential physical risks to which they are exposed. In the technical design stage of the Home for Elderly People structural plan, the objective was to know the spatial and structural dimensions that provided subsidies for the identification of potential sources of physical hazards in that place and served as a basis to carry out the measurements to be carried out in the collection Itself. This was done by one of the researchers through an instrument elaborated with items based on the *RDCs* from the *ANVISA* No. 283/2005 and No. 50/2002, distributed in six parts as follows: institution identification, structural characteristics of the institution, risk of trauma, electric risk, risk of noise and arrangement of furniture and equipment.

It was chosen direct questionings, with objective items facilitating the completion and favoring the tabulation of the data, through the technique of direct observation systematized, allowing the immediate registration of the sources of physical hazard.

Data were collected to identify the physical hazards present at the Institution's field under study: a digital camera (SONY®, 16.1 mega pixels), a tape (TRAMONTINA® with 3 meters and a decibel meter (Instrutherm®, DEC-490) which were used to record and store images, perform measurements and capture noise, respectively. The decibel meter allowed the measurement of sound pressure weighted in scales A and B that cover two ranges, from 35 to 90dB (low) and from 75 to 130dB (high), frequency range from 31.5 Hz to 8000 Hz, whose measured value is in RMS (Root Mean Square), in other words, quadratic mean value.The collection of these levels was in dBA, in slow mode and performed in two moments, choosing the most intense hours of operation of the institution, in the morning and afternoon. Subsequently, all the data obtained were compared, analyzed and tabulated.

Data collection took place during the daytime period at the Home for Elderly People, on alternate days, and data were collected from the following areas: administration, common areas (patio, garden, pool area), dorms, restrooms, infirmary, Social Service room, laundry, cafeteria, kitchen, Physiotherapy room, and storeroom.

RESULTS AND DISCUSSION

The Home for Elderly People researched is a philanthropic institution created in 1981 with capacity for 39 seniors, being this the current public of the Institution. The elderly are registered according to the degree of dependence. Where 16 elderly (41.03%) have a degree of dependence level I, 08 elderly (20.51%) have a degree of dependence level II and 15 elderly (38.46%) have a degree of dependence level III.

The employees are 02 technical staff, 03 nursing technicians, 7 elderly caregivers, 02 kitchen staff, 01 in the laundry room and 03 general service assistants.

The external area of the Institution studied is presented without identification plates and contains only one glass door for access to the service, which does not comply with the provisions of the Legislation in force. It also has an outdoor area for outdoor activities and a patio with an area of 270 m^2 and all environments, whether external or internal, contain anti-slip floor and handrail unilaterally and bilaterally on access ramps and circulation areas, and are in conformity with specific legislation. The entrance door is 2.05 m high x 0.90 m wide, with simple locking.

Considering the physical dimensions of the dormitory of the study site, it was verified that they are separated by sex and harbor a maximum of 3 elderly. The bathrooms are part of each dormitory, each one being used by at most three elderly people. It was noted that the walls and dormitory roofs, such as bathrooms (**Figure 1**), are masonry covered with white ceramic, washable, one of which has an anti-slip floor, neutral color (**Figure 1**). Similar pattern is presented by the walls, floor, and ceilings of the other internal dependencies of the Home for Elderly People studied, but, there was the presence of electric risk in one of the bathrooms of the elderly, where there is a wall outlet immediately below the water, to turn on the shower that dripped constantly on a plastic bucket, whose lead wire and its plug are loose, to be connected at the time of the bath. The showers are not provided with curtains or insulation box.

In some dormitories, there were suspended objects, not

attached to the wall as a television, materials, and objects on narrow shelves fixed above the headboards of the beds, objects inside plastic bags hanging in the latches of the windows (**Figure 1**). There was also a lack of wake-light and an alarm bell in the dorms.

The employees' bathrooms had walls that were poorly maintained and had clear infiltration points (**Figure 2**), a factor that facilitated contamination. It was also used as a deposit of cleaning material, impairing mobility in space.

Figure 1 – Dormitory.
Source: Authors' collection, *Pará*, 2015

Figure 2 – Employees' bathroom
Source: Authors' collection, *Pará*, 2015

The pharmacy (so named by the Institution under study) is actually a storage place for medications, dressing and nebulization materials, and a place to prepare the medications that will be administered to the elderly and is located in an area of 9.76 m² and whose responsibility is the on-call nursing technician. It was observed that the sharps are poorly stored and the improvised disposal box was on the ground, an inappropriate place.

The ward, in turn, is located in a space of 14.37 m², with two beds used for emergency cases and observations of the institutionalized elderly. This environment showed a potential presence of a risk of traumas due to irregularities in the floor and badly positioned furniture, as well as electrical and explosion risks, due to the presence of O_2 cylinders between stretchers, and nearby sockets.

The kitchen area of the study field is equivalent to 23.40 m², space compatible with a good distribution of activities, allowing the minimization of risks to which the professionals are exposed. However, there is a risk of falls and traumas due to the presence of carpets and slippery floors, as well as the thermal risk caused by working with high temperature and intensified by the existing low ventilation.

The cafeteria, in turn, occupies an area of 50.0 m², presenting adequate space for the daily meals of the inmates, leaving them properly accommodated and freeing the professionals who carry out their activities of risks related to insufficient spaces.

The laundry of the institute analyzed has all the physical risks already mentioned, indicating an environment unfavorable to the health of the employee, being inferred, for the evidenced, to be the most vulnerable to the physical loads of every institution, the noise, humidity and risk of electric shock at the site, as the most expressive. Concerning the sound pressure level in the different environments of the Institution studied, the measurements showed that the environments with the highest and lowest sound intensity are, respectively, the laundry (average of 65 dBA) and the infirmary (49.1 dBA).

The physical risks to the professionals of Home for Elderly People studied may present variable morbidity and may, depending on the conditions and specifics, lead to temporary or permanent incapacity. The theme of physical hazards in Homes for Elderly People was proposed to be studied, considering it to be an occupational health problem, in whose control and prevention, the nurse has a prominent action. The choice of physical risks was due to the fact that they were frequent, and easily measurable. Moreover, seeking to devise an instrument that is easy to understand and that the items allow its use by managers of any Institute, providing them with a subsidy to evaluate and carry out possible and necessary corrective interventions.

When analyzing the capacity comparing with the amount of the elderly one can realize that the maximum capacity of the place is being occupied. This assertion ratifies that Brazilian families are resorting to the institutionalization of the elderly, a fact that occurs for different reasons. Nevertheless, the institutionalization of the elderly should be the last alternative care which is worrying, as the Home for Elderly People is occupying a different place from the

one that would be due.[7]

Comparing the found in relation to the dimensions and the structure of the external space with the one determined by the *RDC* from the *ANVISA* No. 283/2005 some inadequacies were identified because, it establishes external access with at least two doors, Being an exclusively of service, with a free span with minimum width of 1.10 m, with simple locking without the use of locks or keys. However, the size of the adaptations of the Institute evaluated is among the established standards.[4]

At the Home for Elderly People field of the study, professionals perform diverse functions, each one being responsible for activities within their competencies. Nonetheless, this does not change the exposure to risks, since all are in the same environment and in general all have similar attitudes, placing them in a situation of vulnerability and exposure to risks during working activities.

With regard to the analysis of the professional composition of Home for Elderly People, it is possible to perceive the existence of a professional deficit, with an absence of physicians, nurses and other professionals such as nutritionists and physiotherapists, for example. This factor predisposes to the occurrence of health problems due to the overload of work of the existing professionals, besides not guaranteeing the adequate assistance to the elderly who reside there.

The Home for Elderly People must meet the needs of the elderly in every way, and to this end, they must make available the work of Social Assistance, Medicine, Psychology, Nursing, Physiotherapy, Occupational Therapy, Dentistry, Nutrition and other services. In the scenario in which these Institutions are currently, there is a need to hire more professionals that make up a multiprofessional team, with the intention of assisting the elderly holistically.[8]

The institutionalized elderly are distributed among the three modalities/degrees of dependency specified previously presented, showing a personnel dimension incompatible with the minimum recommended, noting that only the cleaning and kitchen services are compatible with the service load.[4] Medical, psychological, nutritional and social assistance services are not routinely guaranteed. Yet, when necessary, the elderly are hospitalized in the public health network and the Family Health Strategy team offers support, within its limitations, by providing care and visits to the institution.

The nursing service is not fully guaranteed, since the institution studied does not have a nurse, being a professional of extreme need and value for conducting the nursing team, management of care and service and preventive activities. The presence of the nurse is essential to the process of caring for the elderly, visualizing it in all its vital aspects. Thus, the nurses' work is the capital to maintain quality care to this public; in addition, the presence of the nurse in this unit would imply in reducing the risks, considering that he is a trained and qualified professional to ensure the functionality and harmony of the work, comfort and safety of the elderly and employees, among other activities. [8]

The elderly present needs that demand high demand from health professionals, including the nursing technician, and the *RDC* from the *ANVISA* No. 283/2005 establishes three per shift of 8h or 12/36h, in the Home for Elderly People surveyed there are three for the total shifts, when the ideal would be: nine for the 8 hour shift and six for the 12/36 shift. In this way, the number of professionals is understated, hindering the development and quality of their assistance, as well as exposing them to physical, biological and psychological risks and burdens, among others.[4]

Completing the care team in the field institution of this study, there are the caregivers of the elderly, who are divided into two categories as follows: formal caregivers, those belonging to the institution or outsourced professionals, to provide care for the elderly and informal, are those who provide voluntary assistance, such as neighbors, friends or family. Thus, observing the total number of servers and the needs for each degree of dependence, it is detected that the ideal quantity of caregivers should be composed of four/shift work, instead of seven for all shifts, respecting the load working hours and rest. Therefore, the work overload of these caregivers is incontestable, with consequent susceptibility to physical and psychological exhaustion. Evaluating the composition of employees, a problem to be corrected in an emergency is identified, since the overload and lack of professionals is closely linked to possible health implications, occurrence of accidents and emergence of occupational diseases, besides of impaired care.[9, 10-11]

The size of the Home for Elderly People and the degree of dependency of the elderly was considered a potential source of physical risk in this study, because depending on their characteristics and measures, they may influence the size of the personnel that provide assistance so that it is of a quality and not source of overload for the health professional.

Entering the Home for Elderly People and making an appreciation of the environments of the elderly in which the professionals work, it is possible to evaluate the adequacy of the physical dimensions of the dormitories of the field of this study, being verified that they are separated by sex and shelter at the maximum of three elderly people. Furthermore, all are equipped with bathroom, thus respecting the regulation required for the standards of division and distribution of dormitories that present, respectively, the physical sizing of the according to the recommended.[4]

On the other hand, factors that worry are the absence of wakeful light and alarm bell in these environments, which makes difficult for the elderly as well as the professional, in case there is need to move at night. Additionally, there is the presence (in some dormitories) of objects not attached to the wall and suspended (television, objects, among others) or in poor state of conservation of the walls according to **Figure 1**, factors that increase the predisposition to trauma

during professional activities. Also, the ergonomic overload causes health damage and disrupts the development of professional activities, reducing the quality of care.[4]

Walls and ceilings are white, coinciding with the results observed in previous studies performed in neonatal intensive care unit and Material and Sterilization Center, respectively. Where it was found that allowing greater reflectance, in addition to representing simplicity, peace, harmony and stability, necessary for the hospital environment and Health Care Establishments that should transmit pleasant sensations and comfort to the patient, family and professionals. According to the dimensions of the environments, there is a color pattern that makes them more spacious or comfortable, while facilitating the performance of tasks that require attention.[12-13]

It is necessary to have adequate space and allow the mobility of professionals, so that they can carry out their activities safely, because the environmental suitability is directly related to balance and visual harmony, so if not appropriate, can generate risks of trauma and mechanical loads to the professional.

The bathrooms are part of each dormitory, each one being used by a maximum of three seniors. Emphasizing that they are same-sex seniors and that bathrooms are for the exclusive use of residents of Home for Elderly People. It can be noticed the occurrence of inadequacies in the physical structure of the employees' bathroom (**Figure 2**), where their dimensions are lower than the recommended one. In addition to the absence of shower. The place evaluated does not have garments nor toilets separated by sex.

Employees must have their own dressing room and bathroom separated by sex, and must have availability for every 10 employees and the dressing room area must be at least 0.50 m^2 per employee/shift, to provide comfort and privacy to them. In order to identify the appropriateness of this space, **Figure 2** shows the found reality of Home for Elderly People evaluated.[4]

Another worrying factor is the use of the bathroom facilities as a deposit of cleaning material (**Figure 2**), a fact that impairs mobility in space and, associated with poor conservation, favors the potentiality of risks, besides causing discomfort to users, disrespecting their territoriality and harming their privacy, which shows little concern for the well-being and quality of the work environment. It is also observed in **Figure 2** the presence of the potential of electric shock risk by the socket installation to switch on the shower just below the outlet of the water, connected to the moment of the bath.

The injuries caused by electric risk follow the history and evolution of the means of electricity generation, according to US statistics 5,000 emergency and emergency units/year attendance and consequently about 1,000 deaths constitute a serious public health problem. A study on burns found that 21.9% of patients who sought medical attention were victims of electric shock. This is a number considered high for this nature of a problem and a worrying factor, as it can result in an even fatal event for the victim.[14]

The sound pressure levels are within the established comfort standards. Nonetheless, it is worth mentioning that the infirmary has a lower noise value because, at the time of data collection, it is found to be unused. Contrary to the laundry, which although it is within the recommended standards, was at the moment, with equipment in disuse due to lack of maintenance. Equipment considered noisy as the sterilizer.

The occupational health of professionals, especially those involved in the health process, requires a free work environment to the maximum of loads, be they physical, mechanical, chemical or psychological, among others, however, health professionals, as well as other professionals, they all work in different types of environments, these often, in disagreement with the established in the Legislation in force expose them to the potential of risks with harmful consequences to health.

The health environments are typically unhealthy places that present occupational risks, where it is seldom perceived the care of the managers in relation to the minimization of the risks and concern with the qualities of the users and workers involved in the process.[15]

As an additional factor, poor environmental quality favors the increase of absenteeism and the vulnerability of health services, which may be related to professional demotivation fueled by unfavorable conditions in the workplace, among others. Since the occupational hazards to which the workers are exposed favor the appearance of illnesses and occurrence of occupational accidents, they also penalize companies with either the absence or loss of the professional.[16]

CONCLUSIONS

Given the proposed objective, it can be concluded that there are physical hazards in the Home for Elderly People studied. Furthermore, there is a potential adverse effects to health professionals who work there. It was possible to measure these risks and, above all, it was identified that the physical structure in the place assessed is irregular and below that determined by the Legislation in force.

It was also verified that the physical hazards present were as follows: insufficient number of professionals, furniture and equipment inadequate distributions, electric risk, humidity, high sound pressure levels, space inadequacy and high temperature, among others. Although the presence of physical risks in the Home for Elderly People is a reality, these can be minimized from the mapping of environmental conditions, emphasizing that they are preventable and require immediate correction, since they affect the quality of the work performed by the professionals working in such setting.

AUTHORS' CONTRIBUTIONS

Silva DNO has contributed in the work design, data collection, data setup, data interpretation, and also writing final approval of the version to be published. Posso MBS and Barja PR have contributed in the article writing process, critical review of the intellectual content and final approval of the version to be published.

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