REFACS

Original Article
Rev. Fam., Ciclos Vida Saúde Contexto Soc.
http://seer.uftm.edu.br/revistaeletronica/index.php/refacs/index
ISSN: 2318-8413 DOI*:* 10.18554/refacs.v11i3.7164

Occupational nurses: sociodemographic profile, training and professional development

Enfermeiros do trabalho: perfil sociodemográfico, formação e aperfeiçoamento profissional

Enfermeros del trabajo: perfil sociodemográfico, formación y capacitación profesional

Daniela Sarreta Ignacio[1], Carolina Cassiano[2], Laura Andrian Leal[3] Silvia Helena Henriques[4]

Received: 16/10/2023 **Accepted:** 03/12/2023 **Published:** 15/12/2023

Objective: to analyze the sociodemographic profile and the aspects related to the training and professional development of occupational nurses in Brazil. **Methods:** descriptive, cross -sectional and quantitative research, conducted from November 2020 to May 2021, through an online form, presenting directive questions regarding sociodemographic aspects, training and professional improvement. The data were analyzed through descriptive statistics. **Results:** there were 65 participants, of which 89.2% were female, 69.23% had a live in partner, and with an average age 40 years and mode of 36 years of age. The degree in Nursing (66.15%) and the Postgraduate in Occupational Nursing (89.23%) were carried out in private educational institutions. Among occupational nurses, 32.7% were inserted in the area with no specialization, and the Southeastern region of Brazil is responsible for absorbing 86% of these professionals. When it came to sectors of work, the health sector stood out, followed by the public administration, services and sugar and alcohol, totaling 35 professionals, in absolute values. The investment in qualification occurs through *lato sensu* courses in greater proportion with 92.30% of these workers, and 7.69% at *stricto sensu* level. **Conclusion:** there is a relevant greater diffusion of *stricto sensu* level courses, particularly in the area of occupational nursing. It is also suggested new studies in the area, especially in other regions of Brazil, mainly aiming at identifying knowledge gaps and directing efforts to the continuous improvement of occupational health practice to the economically active Brazilian population.
Descriptors: Occupational health nursing; Occupational health; Nurse's role; Staff development; Professional training.

Objetivo: analisar o perfil sociodemográfico e os aspectos relacionados à formação e ao aperfeiçoamento profissional de enfermeiros do trabalho no Brasil. **Método:** pesquisa descritiva, transversal e quantitativa, realizada entre novembro de 2020 a maio de 2021, através de um formulário eletrônico, apresentando perguntas diretivas quanto aos aspectos sociodemográficos, formação e aperfeiçoamento profissional. Os dados foram analisados por meio de estatística descritiva. **Resultados:** foram alcançados 65 participantes, dos quais 89,2% eram do gênero feminino, 69,23% que convivem com companheiro (a), e tendo como média de idade 40 anos e moda 36 anos. A graduação em enfermagem (66,15%) e a pós-graduação em enfermagem do trabalho (89,23%) foram realizadas em instituições de ensino privadas. Entre os enfermeiros do trabalho, 32,7% foram inseridos na área sem a respectiva especialização, sendo a região sudeste responsável por absorver 86% destes profissionais. Nos setores de atuação, destacou-se o setor saúde, seguido da administração pública, prestação de serviços e sucroalcooleira, totalizando 35 profissionais, em valores absolutos. O investimento em qualificação ocorre por meio de cursos *lato sensu* em maior proporção com 92,30% desses trabalhadores, já em nível *stricto sensu*, 7,69%. **Conclusão:** Faz-se relevante maior difusão de cursos nível *stricto sensu*, em específico na área de enfermagem ocupacional. Sugere-se também novos estudos na área, sobretudo em outras regiões do Brasil, visando sobretudo identificar lacunas de conhecimento e direcionar esforços para a melhoria contínua da prática na saúde ocupacional para a população economicamente ativa brasileira**.**
Descritores: Enfermagem do trabalho; Saúde ocupacional; Papel do profissional de enfermagem; Desenvolvimento de pessoal; Capacitação profissional.

Objetivo: analizar el perfil sociodemográfico y los aspectos relacionados con la formación y la capacitación profesional de enfermeros del trabajo en Brasil. **Método**: estudio descriptivo, transversal y cuantitativo, realizado entre noviembre de 2020 y mayo de 2021, utilizando un formulario electrónico con preguntas directivas sobre aspectos sociodemográficos, formación y capacitación profesional. Los datos se analizaron mediante estadística descriptiva**. Resultados:** Se llegó a 65 participantes, de los cuales el 89,2% eran mujeres, el 69,23% vivían en pareja, y la edad media era de 40 años y la moda de 36 años. El pregrado en enfermería (66,15%) y el postgrado en enfermería del trabajo (89,23%) procedían de centros de enseñanza privados. Entre los enfermeros del trabajo, el 32,7% habían accedido a la profesión sin especialización, y la región sudeste fue la responsable de absorber al 86% de estos profesionales. Por sectores, destaca el sanitario, seguido de la administración pública, la prestación de servicios y el azúcar y el alcohol, con un total de 35 profesionales en términos absolutos. La inversión en cualificación se produce en mayor medida a través de cursos *lato sensu*, con el 92,30% de estos trabajadores, mientras que los cursos *stricto sensu* suponen el 7,69%. **Conclusión:** Es importante aumentar el número de cursos a nivel *stricto sensu*, específicamente en el área de enfermería del trabajo. También se sugieren más estudios en el área, especialmente en otras regiones de Brasil, con el objetivo de identificar lagunas en el conocimiento y dirigir los esfuerzos hacia la mejora continua de la práctica de la salud ocupacional para la población económicamente activa de Brasil.
Descriptores: Enfermería del trabajo; Salud laboral; Rol de la enfermera; Desarollo de personal; Capacitación profesional.

Corresponding Author: Carolina Cassiano – carolinacassiano03@gmail.com

1. Faculdade Dr. Francisco Maeda (FAFRAM). Department of Specialized Care of the City Health Department of Uberaba, Uberaba/MG, Brazil.
2. Strictu Sensu Postgraduate Program in Sciences from the Nursing Doctoral Interunits Program of the Escola de Enfermagem de Ribeirão Preto (EERP), Universidade de São Paulo (USP), Ribeirão Preto/SP, Brazil.
3. EERP/USP. Centro Universitário Municipal de Franca - FACEF, Franca/SP, Brazil.
4. Department of General and Specialized Nursing of the EERP/USP. Ribeirão Preto/SP, Brazil.

INTRODUCTION

Occupational nursing professionals constitute a predominant group in the health field, dedicated to offering care to the working population[1]. In this context, Occupational Nursing is defined as a specialized practice aimed at providing safety and health services and programs to workers, as well as groups of workers and communities. This area has a notable emphasis on the promotion, protection and recovery of workers' health, also focusing on the prevention of injuries and accidents at work, in addition to protection against environmental hazards[2].

The Occupational Health Nurse (OHN) performs essential functions by monitoring the health of workers and constitutes, along with Occupational Medicine, the basis of health in public and private companies, contributing to prevention services. In this way, it is a nursing specialty that considers the health status of individuals in relation to the workplace, with the purpose of achieving the highest level of physical, mental and social well-being of the working population[3]. It is essential to highlight that Occupational Nurses (OHNs) must enjoy professional independence in the performance of their duties. This autonomy is based on ensuring that these professionals have skills appropriate to new economic realities, and are capable of meeting the diverse work demands that characterize most organizations in the 21st century[4].

Therefore, the presence of OHNs in occupational health teams has become essential. The function, focused on prevention, protection of the health and safety of workers, is carried out in collaboration with multidisciplinary teams. Lately, the field of action has been expanded to include quality of life at work, and there is the possibility of an even greater expansion in the future[5].

Nurses specialized in this field skillfully combine diverse knowledge, balancing varied requirements with a view to creating a safer work environment, and to do so, a specific professional profile is required that must be constantly improved.

In this sense, knowing the sociodemographic profile, as well as the training and professional development characteristics of Brazilian OHNs is fundamental, with a view to corroborating the strategic planning of organizations and educational institutions, in addition to providing quality assistance, professional development, formulation occupational health policies, promotion of diversity, nucleation and development of research in the area. Knowing the profile and aspects that cover the training and professional development of OHNs can help in determining professional profiles that suit work organizations, distinguishing points of

excellence and those to be improved, seeking to fill gaps and add knowledge to the workers themselves.

In view of the above, this study aims to analyze the sociodemographic profile and aspects related to the training and professional development of occupational nurses in Brazil.

METHODS

Descriptive, cross-sectional study with a quantitative approach. It covered medium and large labor organizations, urban and rural, which had the Engineering, Safety and Occupational Medicine Service (*Serviço de Engenharia, Segurança e Medicina no Trabalho - SESMT*), in accordance with Regulatory Standard No. 04 (NR 04)[6].

Companies from different production profiles across Brazil were selected, including agroindustry, production of goods, services and civil construction, which had OHNs on their staff. Large companies with OHNs in the interior of the state of São Paulo and Triângulo Mineiro region were initially identified, and from these, other companies were contacted throughout the Brazilian territory, selecting those that offered to provide this type of service.

The participants were nurses, with *lato sensu* specialization in workers' health or occupational health or occupational nursing, certified in the Brazilian territory. The eligibility criteria were OHNs of both sexes, with at least three months of experience working as OHNs. And as exclusion criteria, OHNs absent from service due to health leave or maternity leave and working in other areas.

The OHNs were recruited via social medias, and then formally invited online and by telephone to participate in the study. For data collection, the snowball sampling technique[7] was used, through the application of an access link to the electronic form, which was kept available for a period of six months, with the restriction of sending a single response per participant.

Data collection was carried out from November 2020 to May 2021. The data collection instrument on the participants' sociodemographic profile was composed of directive questions related to sex, age, marital status, origin, year of graduation, institution of graduation, year of completion of the specialization, type of financing from the institution of specialization, field of activity of the company the participant works for, length of experience in Occupational Nursing and length of time working in the current job.

Due to the active pandemic of SARS-CoV-2 in Brazil during the data collection period, the instrument was elaborated and made available to participants through an electronic form, using the research administration software Google Forms™, whose active access link to it was included in the study's electronic cover letter.

For analysis, the data was tabulated, followed by the use of descriptive statistics for its analysis and determination of absolute and relative frequencies and prevalence, using the Statistical Package for Social Science for Windows (SPSS)™ version 23.0 software.

This study was approved by the Research Ethics Committee of the proposing institution, whose protocol of the Certificate of Presentation of Ethical Appreciation (CAAE) was corresponding to: 33268620.2.0000.5393. The Free and Informed Consent Form (FICF) was made available for acceptance in the form and download by participants and confidentiality of responses and anonymity were ensured. Participants were identified by the acronym "OHN", referring to Occupational Health Nurse, followed by a number, which represented each order in which the instruments were completed.

RESULTS

The sample of OHNs consisted of 65 professionals. Table 1 presents the sample composition with 58 (89.2%) female participants and seven (10.8%) male participants. It is noteworthy that the options for distribution, according to sex, were presented in a way that disregards the different gender options, therefore considering only the biological character that distinguishes between male, female and other, where the third option was not selected by any of the participants.

With regard to age in complete years, it was necessary to distribute it in intervals of five years due to the difference between the minimum and maximum values being 35 years. It is noteworthy that the average age of the participants was 40 years old, and the mode of 36 years old (Table 1).

Regarding marital status, it is identified that 69.23% of participants were in a relationship with another person, regardless of whether their union is formalized or not, and there is a greater occurrence among individuals aged between 32 and 35 years old, for both sexes. In the analysis regarding marital status by sex and age group, a greater concentration is observed in females, aged 32 to 35 years, with a stable relationship (married or living with a partner) at 17.64%, and among men the highest concentration is in the age group of 36 to 40 years of age (8.82%). (Table 1).

Table 1. Occupational health nurses according to sex, age, age group, and marital status, in absolute and relative values, Ribeirão Preto, São Paulo, Brazil, 2023.

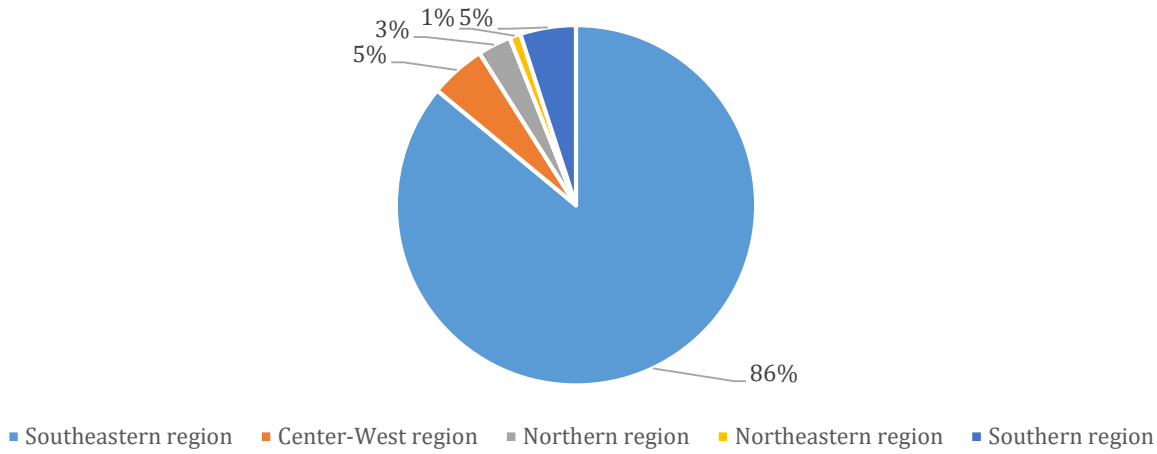
MARITAL STATUS/ SEX		**AGE GROUP**							
Frequencies		**32-35**	**36-40**	**41-45**	**46-50**	**51-55**	**56-60**	**61/+**	**Total**
Married	No	5	3	4	3	**1**	**2**	**0**	**18**
	%	14.71%	8.82%	11.76%	8.82%	**2.94%**	**5.88%**	**0.00%**	**52.94%**
Female	No	4	2	2	3	1	2	0	14
	%	11.76%	5.88%	5.88%	8.82%	2.94%	5.88%	0.00%	41.18%
Male	No	1	1	2	0	0	0	0	4
	%	2.94%	2.94%	5.88%	0.00%	0.00%	0.00%	0.00%	11.76%
	No	0	1	0	0	**0**	**1**	**1**	**3**
Divorced	%	0.00%	2.94%	0.00%	0.00%	**0.00%**	**2.94%**	**2.94%**	**8.82%**
Female	No	0	1	0	0	0	1	1	3
	%	0.00%	2.94%	0.00%	0.00%	0.00%	2.94%	2.94%	8.82%
Male	No	0	0	0	0	0	0	0	0
	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Single	No	5	2	0	0	**0**	**0**	**0**	**7**
	%	14.71%	5.88%	0.00%	0.00%	**0.00%**	**0.00%**	**0.00%**	**20.59%**
Female	No	4	2	0	0	0	0	0	6
	%	11.76%	5.88%	0.00%	0.00%	0.00%	0.00%	0.00%	17.65%
Male	No	1	0	0	0	0	0	0	1
	%	2.94%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.94%
Live in partner	No	2	4	0	0	**0**	**0**	**0**	**6**
	%	5.88%	11.76%	0.00%	0.00%	**0.00%**	**0.00%**	**0.00%**	**17.65%**
Female	No	2	2	0	0	0	0	0	4
	%	5.88%	5.88%	0.00%	0.00%	0.00%	0.00%	0.00%	11.76%
Male	No	0	2	0	0	0	0	0	2
	%	0.00%	5.88%	0.00%	0.00%	0.00%	0.00%	0.00%	5.88%
Total	**No**	**12**	**10**	**4**	**3**	**1**	**3**	**1**	**34**
	%	**35.29%**	**29.41%**	**11.76%**	**8.82%**	**2.94%**	**8.82%**	**2.94%**	**100%**

The distribution, according to the region of the country in which the OHNs are linked to carry out their professional practice, shows a concentration of professionals in the Southeastern region, with 86%, followed by the Southern and Central-West regions with 5% of professionals each, as shown in Graph 1.

Regarding the type of business sector in which they operate, there is a variety of economic sectors in which OHNs are inserted. Graph 2 illustrates this distribution, according to the type of economic activity of the company in which the OHN was linked, in professional practice.

The distribution according to the sector of economic activity of the company in which the participant is linked shows the predominance of the health care area (No=23), followed by the public administration, sugar and alcohol and service sectors (No=4 in each one of them) (Graph 2). The sector with the greatest presence of OHNs (health) was located in cities with more than 300 thousand inhabitants.

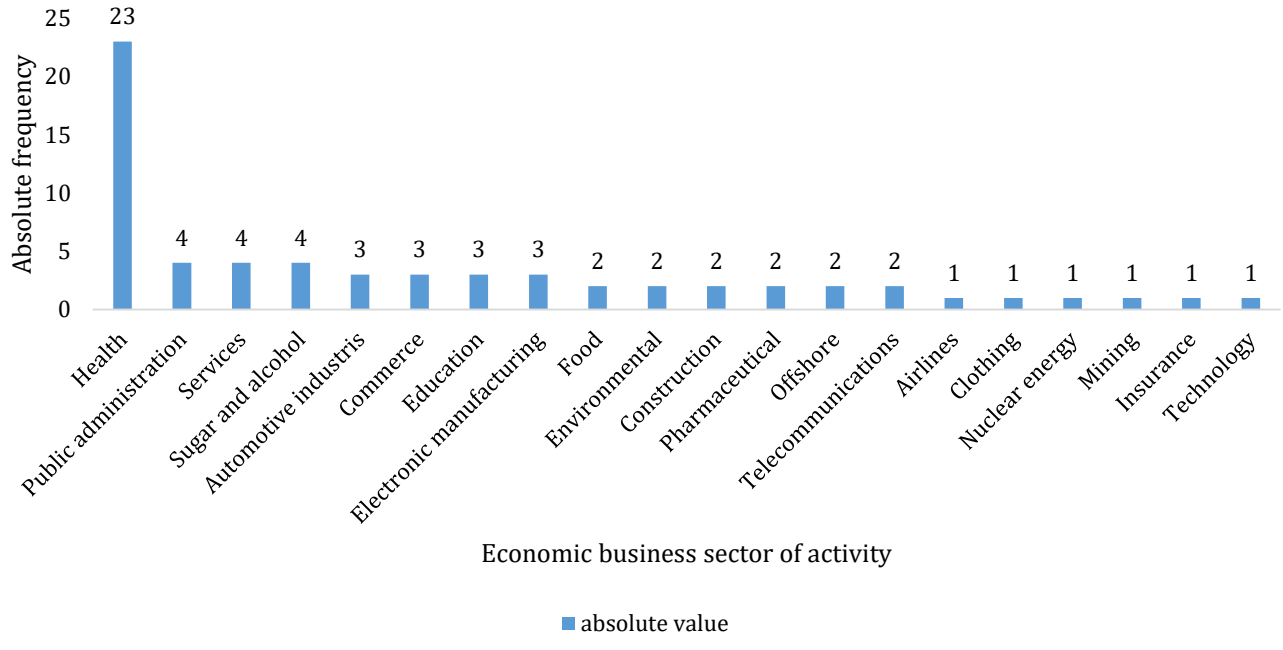
Graph 1. Occupational nurses according to Brazilian region of activity, Ribeirão Preto, São Paulo, Brazil 2023.



The difference in time, in years, between the end of the nursing degree and the time working in the area of occupational nursing, for some professionals (No=10) was zero, that is, the participants were inserted in the area without holding the degree necessary or hired as soon as they completed it (No=07). The majority (No=38) joined the area after ten years working as a generalist nurse, a change justified by the possibility of changing the sector or area of activity, or working non-rotating and during business hours.

It is noteworthy that among multinational companies, the majority had only one occupational nursing professional to serve the headquarters and its branches, which operated in different sectors of the economy and are dispersed across various regions of the country.

Graph 2. Occupational nurses according to the type of business sector in which they work, in absolute frequency, Ribeirão Preto, São Paulo, Brazil, 2023.

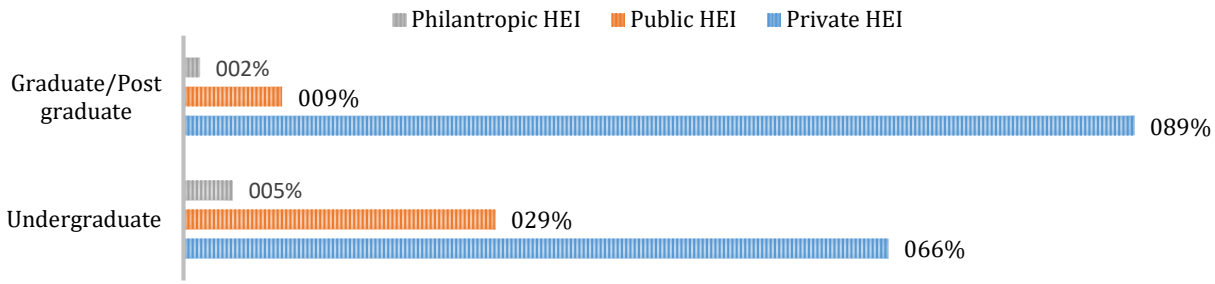


Graph 3 shows the type of Higher Education Institution (HEI) in which the participants completed their undergraduate and, later, postgraduate studies. The types of HEI are classified as public, private and private non-profit (philanthropic).

Note the predominance of private training institutions, both for undergraduate studies, with 66.15%, and postgraduate studies in 89.23% of cases, followed by public HEIs with an incidence of 29.23% in undergraduate and 9.23% in postgraduate studies (Graph 3). It was found that investment in qualification occurs through *lato sensu* courses in a greater proportion with 92.30% of these workers, while investment in training in the *stricto sensu* modality was highlighted by five participants (7.69%), including, three with a master's degree and two with a PhD, bringing greater specificity in more advanced academic training. Furthermore, other specializations were identified to meet demands during professional practice, in the *lato sensu*/specializations modality (No=70).

It was observed that specializations in Health Management (17.81%) and Teaching in Higher Education (16.44%) were predominant, followed by Urgency and Emergency (10.96%) and Auditing (6.84%). It was found that such specializations are complementary, so that the OHN can meet the demands that arise during their professional practice, and at the same time, they are specific and complex, requiring investiture in other *lato sensu* courses, for the development of new and necessary professional skills.

Graph 3. Occupational Nurses according to the type of financing from Higher Education Institutions to obtain the title of Bachelor of Nursing and Specialist in Occupational Nursing or Occupational Health, Ribeirão Preto, São Paulo, Brazil 2023.



There was also the presence of specializations that do not come close to the daily practice of OHN, such as Aesthetics, Obstetrics and Neonatology, but which may have occurred chronologically prior to the specialization in Occupational Nursing, or even during the period of professional practice as an Assistant Nurse, as there are professionals with a career of more than ten years before joining as OHN, No=11 (16.92%).

DISCUSSION

In Brazil, until October 2023, there were 716,413 registered nurses[8] and of these, there were 3,534 occupational nurses, in the last report published in 2015[9]. This number of occupational nurses corresponds to 0.49% of professional nurses; In the United States, there are more than 12,342 occupational health nurses currently employed[10].

As for gender, in this study it was predominantly female, corroborating data from other countries that also present high rates of women in this segment of nursing. Internationally, in terms of gender, OHNs in Spain are 67.28% female and 32.78% male[11]. In the United States, 89% of OHNs are women and 11% are men, and there has been a gradual increase in the percentage of men in the last ten years of around 4% in the profession[10]; in the European Union, specifically in Portugal, there are 67.8% of female OHNs to 32.2% of males[12].

In Brazil, there was a greater concentration of female OHNs. Compared to other countries, this reflects gender issues related to nursing (feminization)[13]. Furthermore, nursing is seen as a typically female profession, considered as an extension of domestic services (caring and cleaning), associated with vocation, reproducing gender roles[14].

In Brazil, for the data for OHNs regarding age, as identified in this study, the average is 40 years old, with a higher occurrence among participants in the age group of 35 to 39 years old. In a previous study with this same professional category, the majority of participants were between 31 and 40 years old[15]. In Spain, the average age is 36.5 years for professionals working in the country[16], close to the average age in Canadian statistical data, which is 35 years[17].

It is believed that becoming an OHN was one of the alternatives found by professionals who wanted to change their area of work, as a possibility of leaving employment relationships with rotating shifts and night work, as well as reintegration into the job market. These conditions allow this professional to add assistance expertise to their work as an OHN, contributing to safer practice.

Regarding marital status, there were three large groups: single; divorced and professionals who have a partner. There was no record of the status: separated or widowed. The highest occurrence among OHNs was 69.23% in the “has a partner” category, similar to the study with OHNs in the state of Rio Grande do Sul who have a partner, corresponding to 66.6%[15]. Data on marital status for nurses, in general, in Brazil is 50.9% for individuals who describe themselves as married, or in a stable union or with a consensual contract[18].

Reconciling professional activity with family life is considered a factor of dissatisfaction among nurses and an element that causes stress and overload, according to research carried

out with nurses from different areas of hospital care, home care services and management positions[19].

In Spain, a study showed a positive association between the marital status of being married or living with a partner and the better quality of care provided by nurses from different sectors, and that the older these professionals are, the more fulfilled they were with their work[20].

The distribution of OHNs in the Southeastern region corresponds to 75.3%[9]. This concentration is justified by the greater concentration of companies and industries in this region of Brazil[21]. According to the data presented in the Nursing Profile in Brazil[18], the states of São Paulo and Rio de Janeiro have 36.2% of all professional nurses in the country, and added to the other states in the Southeastern region, there are 48.8% of this workforce[18]. In other countries, there is a concentration of these professionals in capitals and their metropolitan regions[12].

OHNs show a similar pattern of concentration in regions of extremely populated cities such as New York, Chicago and Washington[10], as well as in Spain, in the regions of Catalonia (28.09%) and Madrid (15.12%), which together have 43 .21% of the country's OHNs[11].

Regarding the distribution of OHNs, it can also be seen in other countries that they are concentrated in regions with greater industrial density[22], as in Brazilian nursing in general.

In absolute terms, the health, public administration, service provision and sugar and alcohol industry segments absorb 35 of the OHNs participating in the study. This differs from the data on participation in job creation in the Brazilian economy, which describes a greater concentration in economic sectors: 44% in the automotive industry and commerce followed by 9.27% in the converters or manufacturing industry and 6.96% in the hospitality and food industry[23].

The analysis of the sectors that absorb the majority of workers studied highlights their importance in the economy and the job market, such as health, which plays a crucial role in promoting and recovering health and preventing injuries[11]. The diversity of these sectors, including public administration, service provision and the sugar and alcohol industry, highlights the complexity and interconnection in the economic and social panorama, emphasizing the need for a holistic approach in their development[1].

In the Southern region of Brazil, there is a divergence when observing 25% of OHNs in water supply and sewage and agricultural inputs (fertilizers) companies and the remainder distributed with 15% each between the shipping industry, refineries and logistics companies and transport[15]. The difference between the distribution of OHNs and the sectors that employ

the most in the Brazilian economy is justified when considering the legislation that regulates the SESMT, which is NR 4, which determines an OHN for urban companies with more than 3,501 employees, while in rural companies and the health sector, every 500 workers must have an OHN[5].

The diversification of companies' branches of economic activity could be greater, since there are business groups with activities in more than one segment of economic activity in the country, but which keep the OHNs registered only in their headquarters units and having as their basis of activity the where there is the greatest health risk for its employees/collaborators. This fact means that the OHN needs to master the legal aspects of more than one type of economic activity category, due to the type of risk to which workers are exposed, increasing the complexity of the work carried out, the need not only for updating, as well as the development of specific skills, to adequately meet the demands that arise in their daily lives.

Regarding training, it was identified that 17 (32.3%) professionals entered their career directly in the Occupational Nursing Practice, completing the specialization course jointly as a professional exercise, or shortly after completing it. It is also worth highlighting the existence of professionals who used their specialization in Occupational Nursing as a way of reintegrating into the job market, or as a mechanism for changing the type of organization/work regime to which they were linked.

Regarding the time spent in a career as a generalist nurse and the time spent working after specializing in Occupational Nursing, it appears that the time spent professionally as a generalist is an indication of the construction of a solid base of clinical knowledge, combined with a well-established technical domain, demonstrating greater expertise and security in their performance.

In international work, it was found that in Spain and the United States, OHNs must have higher education, and this qualifies them for professional practice in the area of occupational health[10, 11] while in countries such as Portugal, Canada, Japan, South Africa, England, Mexico, China, Malaysia, Indonesia, Thailand, Vietnam, Cambodia, Myanmar and Costa Rica one must, after graduating in nursing, obtain a specialization or master's degree in the area of workers' health or occupational health or nursing work; and register as an OHN to work in this area[12, 17].

Thus, academic titles are important for OHNs in their professional performance, as 66.7% of countries have an official titling mechanism and specific training programs and in Spain this is only obtained through residence or in master's programs[11]; ratifying the above, the establishment of master's and PhD programs in occupational health nursing is relevant[24].

In this sense, it is necessary to think about higher education as a means for the country's economic and social development, as investing in education guarantees a promising future for young Brazilians, and society benefits from the science and technology generated in universities. However, it is necessary to identify and develop new forms of financing for higher education, especially in private institutions, combined with the need for effective integration of HEIs with the market, teaching, research and extension, generating various types of income, especially for those least assisted.

The data from this study show a majority profile of OHNs graduated and postgraduated in private HEIs. Thus, the privatization of nursing degrees is a recent, progressive and rapidly expanding event. It is noteworthy that, of the nurses trained in the 1990s, 35.1% come from private HEIs; in the first decade of the 21st century, it reached 63.6%, and, from 2010 to 2013, it reached 75.7%. In other words, graduates until the end of the 20th century were, mostly, trained by public authorities, (59.1%), on the other hand, between 2010 and 2013 they were just 19.0% of trainees[25].

The mercantile and competitive private sector is instilling itself in the core of public HEIs, as a result of budget cuts and a defamatory government campaign, which questions their institutional, social and academic legitimacy, which are moving towards the creation of teaching foundations, focused on the various postgraduate modalities to recover their economic sustainability, and society remains in the fight to defend public universities, financed by the State[26].

It is noteworthy that professional development is promoted through the application of strategies aimed at acquiring new professional skills and consequent differentiation in the job market of the individual and the organization to which he or she is linked. To achieve this, there are formal learning strategies (postgraduate courses, updates, training, techno-scientific events) and informal ones (consultation with other professionals with knowledge in the area in question and accessing information via the internet); and can occur spontaneously by the professional or according to a need identified by the organization[27-28].

Furthermore, in the reality of undergraduate and postgraduate nursing courses, only 19.1% of professionals have a *lato sensu* specialization. Thus, the majority of public authorities offer specializations in the residency modality and the others are private educational institutions, whether in person or via distance learning. Furthermore, there is a concentration of HEIs and professionals in the capitals to the detriment of the interior of the country, whether due to greater employability, a greater offer of qualification and specialization courses and/or the value of remuneration per hour of work.

The educational and professional training of occupational nurses is an essential pillar for the quality of services provided, and there is a constant search for specializations in other areas in order to complement their work. Furthermore, many invest in postgraduate courses and continuing education to improve their skills, ensuring effective and highly qualified service to workers. Furthermore, the findings demonstrated the search for complementary specializations, sometimes carried out prior to their work as OHN, which reflects on the commitment of these professionals to constant updating and adaptation to market developments. This is especially relevant in an ever-changing world where new occupational risks, health challenges and skill needs emerge regularly.

Thus, there is a need for public authorities to intervene in the distribution of nursing professionals, as well as correct the distribution of HEIs to regions of the country with fewer undergraduate and postgraduate courses, such as what occurs in the Northern and Northeastern regions[25], promoting the nucleation process.

CONCLUSION

The sociodemographic profile of Brazilian occupational nurses reflects a predominance of women with an average age of 40 years. The majority have undergraduate and postgraduate degrees in nursing from private institutions, with the Southeastern region being the main region for these workers. The health, public administration, service provision and sugar-alcohol sectors concentrate the contingent majority of working professionals and there is a strong investment in *lato sensu* courses, with a minority with *stricto sensu* training. Regarding the limitations of this study, it should be noted that it is a descriptive design, with results predominating in two regions of the country: Southeastern and Southern regions. Such findings can lead to evidence of the characteristics of these regions, even though they are the areas with the highest concentration of companies and industries. Despite this, it is noteworthy that this investigation is relevant and can contribute to new, more in-depth and exploratory investigations, as well as covering other categories in the area of occupational health and with the equivalence of participants by region in Brazil.

Therefore, Occupational Nurses play a vital role in maintaining the health and safety of Brazilian workers, and their sociodemographic, academic and professional profile can provide support for investments that strengthen the occupational health system in Brazil. Therefore, it is suggested that new studies be carried out in the area, including in other regions of Brazil, aiming, above all, to identify gaps in knowledge and direct efforts towards the continuous improvement of occupational health practice in the Brazilian economically active population.

REFERENCES

1. Machado VMT, Monteiro MJFSP, Penaforte MHO, Rodrigues VMCP. Enfermagem do trabalho em Portugal: contexto e perspectivas. Rev Baiana Enferm. [Internet]. 2021 [cited in 15 Nov 2023]; 36:e45605. Available from: https://periodicos.ufba.br/index.php/enfermagem/article/view/45605/25604
2. American Association of Occupational Health Nurses. What is occupational & environmental health nursing? [Internet]. Chicago, IL: AAOHN; 2012 [cited in 15 Nov 2023]. Available from: https://www.aaohn.org/About/What-is-Occupational-and-Environmental-Health-Nursing#:~:text=Occupational%20and%20environmental%20health%20nurses,a%20%E2%80%9Chealthy%E2%80%9D%20bottom%20line.
3. Saldaña M, Pimentel AGM, Posada AS. Occupational health nursing: competence and experience to achieve the safety, health and well-being of the working population. Enferm Clin (Engl Ed) [Internet]. 2019 [cited in 15 Nov 2023]; 29(6):376-80. Available from: https://linkinghub.elsevier.com/retrieve/pii/S1130-8621(19)30370-5
4. Sampaio LHV, Jesus RS, Borges MAM. Enfermeiro do trabalho no controle de doenças ocupacionais. Revista Saúde Multidisciplinar [Internet]. 2022 [cited in 15 Nov 2023]; 11(1):56-61. Available from: http://revistas.famp.edu.br/revistasaudemultidisciplinar/article/view/328/200
5. Mahé A. L'infirmier de santé au travail: prévention et sécurité en équipe pluridisciplinaire. Soins [Internet]. 2021 [cited in 15 Nov 2023]; 66(852):50-52. DOI: https://doi.org/10.1016/S0038-0814(21)00026-8
6. Ministério do Trabalho e Emprego (Brasil). Norma Regulamentadora No. 4 (NR-4) [Internet]. Brasília, DF: Ministério do Trabalho e Emprego; 2020 [cited in 15 Nov 2023]. Available from: https://www.gov.br/trabalho-e-emprego/pt-br/acesso-a-informacao/participacao-social/conselhos-e-orgaos-colegiados/comissao-tripartite-partitaria-permanente/normas-regulamentadora/normas-regulamentadoras-vigentes/norma-regulamentadora-no-4-nr-4
7. Costa BRL. Bola de neve virtual: o uso das redes sociais virtuais no processo de coleta de dados de uma pesquisa científica. RIGS Revista Interdisciplinar de Gestão Social [Internet]. 2018 [citado 15 nov 2023]; 7(1):15-37. Available from: https://periodicos.ufba.br/index.php/rigs/article/view/24649/16131
8. Conselho Federal de Enfermagem. Enfermagem em números [Internet]. Brasília, DF: COFEN; 2023 [cited in 15 Nov 2023]. Available from: https://www.cofen.gov.br/enfermagem-em-numeros/
9. Departamento Intersindical de Estatística e Estudos Socioeconômicos. Anuário da saúde do trabalhador [Internet]. São Paulo: DIEESE; 2016 [cited in 15 Nov 2023]. Available from: https://www.dieese.org.br/anuario/2016/Anuario_Saude_Trabalhador.pdf
10. Zippia The Career Expert. Occupational health nurse: demographics and statistics in the US [Internet]. San Francisco, CA: Zippia; 2021 [cited in 15 Nov 2023]. Available from: https://www.zippia.com/occupational-health-nurse-jobs/demographics/
11. Caballero JG. [Estudio sobre las competencias profesionales de Enfermería del Trabajo en España]. Arch Prev Riesgos Labor. [Internet]. 2020 [cited in 15 Nov 2023]; 23(1):34-51. Available from: https://pubmed.ncbi.nlm.nih.gov/31991076/
12. Ordem dos Enfermeiros. Federação Europeia de Associações de Enfermeiros [Internet]. Lisboa, PT: Ordem dos Enfermeiros; 2021 [cited in 15 Nov 2023]. Available from: https://www.ordemenfermeiros.pt/arquivo-de-p%C3%A1ginas-antigas/federa%C3%A7%C3%A3o-europeia-de-associa%C3%A7%C3%B5es-de-enfermeiros-efn
13. Boniol M, McIsaac M, Xu L, Wuliji T, Diallo K, Campbell J. Genderequity in the health workforce: analysis of 104 countries [Internet]. Geneva, Switzerland: World Health Organization; 2019 [cited in 15 Nov 2023]. Available from: https://iris.who.int/bitstream/handle/10665/311314/WHO-HIS-HWF-Gender-WP1-2019.1-eng.pdf?sequence=1
14. Gandra EC, Silva KL, Passos HR, Schreck RSC. Enfermagem brasileira e a pandemia de COVID-19: desigualdades em evidência. Esc Anna Nery Rev Enferm. [Internet]. 2021 [cited in 15 Nov 2023]; 25(N Esp):e20210058. Available from: https://www.scielo.br/j/ean/a/ccWCPqt8ffm4fbDFvgb68gL/?format=pdf&lang=pt
15. Roloff DIT, Cezar-Vaz MR, Bonow CA, Mello MCVA. Activities of occupational nurses working in companies. Rev Rene [Internet]. 2017 [cited in 15 Nov 2023]; 18(1):76-83. Available from: https://www.redalyc.org/journal/3240/324049855011/html/

16. Peiró T, Lorente L, Vera M. The COVID-19 crisis: skills that are paramount to build into nursing programs for future global health crisis. Int J Environ Res Public Health. [Internet]. 2020 [cited in 15 Nov 2023]; 17(18):6532. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7558921/pdf/ijerph-17-06532.pdf
17. Canadian Nurses Association. Nursing statistics [Internet]. Ottawa, ON: Canadian Nurses Association; 2021 [cited in 15 Nov 2023]. Available from: https://www.cna-aiic.ca/en/nursing/regulated-nursing-in-canada/nursing-statistics
18. Machado MH, coordenador. Perfil da enfermagem no Brasil: relatório final [Internet]. Rio de Janeiro: NERHUS, DAPS, ENSP, FIOCRUZ; 2017 [cited in 15 Nov 2023]. 748 p. (Pesquisa Perfil da Enfermagem no Brasil; v. 1).
Available from: https://www.cofen.gov.br/perfilenfermagem/pdfs/relatoriofinal.pdf
19. Pinhatti EDG, Vannuchi MTO, Tenani MNF, Haddad MCL. Influências sociodemográficas e laborais na satisfação profissional de enfermeiros em hospital público. Rev Enferm UERJ. [Internet]. 2017 [cited in 15 Nov 2023]; 25:e14405. Available from: https://www.e-publicacoes.uerj.br/enfermagemuerj/article/view/14405/24667
20. Anes EMGJ, Ferreira CAS. Satisfação em enfermagem: perspetiva do enfermeiro versus perspetiva do utent. Revista INFAD de Psicología. International Journal of Developmental and Educational Psychology [Internet]. 2018 [cited in 15 Nov 2023]; 4(1):23-30. Available from: https://revista.infad.eu/index.php/IJODAEP/article/view/1255/1119
21. Instituto Brasileiro de Geografia e Estatística. Estimativa populacional 2020 [Internet]. Rio de Janeiro: IBGE; 2020 [cited in 15 Nov 2023]. Available from: https://www.ibge.gov.br/cidades-e-estados
22. Fukada M. Nursing competency: definition, structure and development. Yonago Acta Med. [Internet]. 2018 [cited in 15 Nov 2023]; 61(1):1-7. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/29599616/
23. Instituto Brasileiro de Geografia e Estatística. Número de empresas, por classificação de atividade [Internet]. Rio de Janeiro: IBGE; 2015 [cited in 15 Nov 2023]. Available from: https://www.ibge.gov.br/estatisticas/economicas/comercio/9068-demografia-das-empresas.html?=&t=destaques
24. Wu FL, Tsai HM, Liou YM, Chou YF, Chang TH, Shiao SJ. Reflections on occupational health nursing in Taiwan: challenges and perspectives. Hu Li Za Zhi [Internet] 2018 [cited in 15 Nov 2023]; 65(2):93-99. Available from: https://pubmed.ncbi.nlm.nih.gov/29564861/
25. Frota MA, Wermelinger MCMW, Vieira LJES, Ximenes Neto FRG, Queiroz RSM, Amorim RF. Mapping nursing training in Brazil: challenges for actions in complex and globalized scenarios. Ciênc Saúde Colet. [Internet] 2020 [cited in 15 Nov 2023]; 25(1):25-35. Available from: https://www.scielo.br/j/csc/a/Bxhbs99CZ8QgZN9QCnJZTPr/?format=pdf&lang=en
26. Araújo RS. Resenha das políticas de financiamento da educação superior num contexto de crise. Education Review Resenhas Educativas [Internet]. 2020 [cited in 15 Nov 2023]; 27. Available from: https://edrev.asu.edu/index.php/ER/article/view/2733/943
27. Albuquerque SGE. Competências gerenciais no contexto da ação de enfermeiros na organização hospitalar. [dissertação]. João Pessoa, PB: Centro de Ciências da Saúde, Universidade Federal da Paraíba; 2020 [cited in 16 Nov 2023]. Available from: http://www.corenpb.gov.br/wp-content/uploads/2022/06/Compet%C3%AAncias-Gerenciais-no-Contexto-da-a%C3%A7%C3%A3o-de-Enfermeiros-na-Organiza%C3%A7%C3%A3o-Hospitalar.pdf
28. Rolim SS. Gestão assistencial e educação permanente: perspectivas no contexto hospitalar [Internet]. [dissertação]. São Paulo, SP: Faculdade de Odontologia, Universidade de São Paulo; 2022 [cited in 16 Nov 2023]. Available from: https://docs.bvsalud.org/biblioref/2023/03/1416918/silviadesouzarolimversaooriginal.pdf

Associated Publisher: Rafael Gomes Ditterich.

Conflict of Interests: the authors declared there is no conflict of interests.

Financing: None.

CONTRIBUTIONS
Daniela Sarreta Ignacio contributed to the design, collection and analysis of data, writing and revision. **Carolina Cassiano** and **Laura Andrian Leal** collaborated in writing and revision. **Silvia Helena Henriques** collaborated in the conception, writing and revision.

How to cite this article (Vancouver)
Ignacio DS, Cassiano C, Leal LA, Henriques SH. Occupational nurses: sociodemographic profile, training and professional development. Rev Fam, Ciclos Vida Saúde Contexto Soc. [Internet]. 2023 [cited in *insert day, month and year of access*]; 11(3):e7164. Available from: *insert access link*. DOI: *insert DOI link*.

How to cite this article (ABNT)
IGNACIO, D. S.; CASSIANO, C.; LEAL, L. A.; HENRIQUES, S. H. Occupational nurses: sociodemographic profile, training and professional development. **Rev. Fam., Ciclos Vida Saúde Contexto Soc.**, Uberaba, MG, v. 11, n. 3, e7164, 2023. DOI: *insert DOI link*. Available from: *insert access link*. Access in: *insert day, month and year of access*.

How to cite this article (APA)
Ignacio, D.S., Cassiano, C., Leal, L.A., & Henriques, S.H. (2023). Occupational nurses: sociodemographic profile, training and professional development. Rev. Fam., Ciclos Vida Saúde Contexto Soc., 11(3). Retrieved in *insert day, month and year of access* from *insert access link*. DOI: *insert DOI link.*

This is an open access article distributed under the terms of the Creative Commons License