ORIGINAL ARTICLE

ASSESSMENT OF WORKING CONDITIONS AND RISK OF ILLNESS AMONG NURSING PROFESSIONALS

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Highlights: (1) Nursing working conditions are linked to the risk of illness. (2) Long hours, job satisfaction and work pace have proven to be a concern. (3) Continuous physical exertion and frequent body aches are found in nursing.

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ASSESSMENT OF WORKING CONDITIONS AND RISK OF ILLNESS AMONG NURSING PROFESSIONALS

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ABSTRACT

Objective: To evaluate the working conditions and risk factors for illness among nursing professionals. Method: A cross-sectional and quantitative study was conducted in a healthcare institution in Southwest Minas Gerais, with 90 nursing professionals. Data were collected using two instruments: a semi-structured questionnaire for sociodemographic, epidemiological, occupational, and working conditions information; and the Inventory of Work and Illness Risks to assess illness indicators among professionals. Results: The variables age, alcohol consumption, length of professional experience, workload, job valuation, and work accidents were found to be associated with the work organization factor ($P < 0.05$) and also with the physical cost of work for hospital nursing professionals ($P < 0.05$). The other factors, i.e., working conditions and physical damage, did not show a significant association with the independent variables. Conclusion: Working conditions are directly or indirectly related to illness among nursing workers. Based on this, it is worth considering actions that mitigate these impacts, in order to improve the physical and mental health of professionals.

Keywords: Working conditions; Nursing; Occupational health.

INTRODUCTION

With the advancement of technology, several changes have occurred in the work environment, resulting in a decrease in the quality of life of many workers. Some factors in the workplace can affect health and increase the risk of illness among workers. In hospital environments, elements such as long working hours, a hostile and stressful environment, frequent shift changes, low pay, and other circumstances have impacted,

mainly, nursing professionals, resulting in illness among these workers[1].

The work context requires nursing professionals to use their personal characteristics and physical and mental balance to cope with the exhausting pace, pressure, and responsibilities inherent in the profession[2]. Studies indicate that illness can be attributed to the uncertainty of work demands, emotional discomfort, stress, and the presence of depressive symptoms in the work environment, which can trigger a variety of health conditions, such as Burnout Syndrome and other disorders[3].

In recent times, the association between work and illness has been a subject discussed in several studies, highlighting the need to understand in detail each problem encountered in the workplace, in order to prevent workers from becoming ill, both mentally and physically. Mental health is one of the main concerns, as its implications often result in abandoning the profession in the workplace[4].

The nursing field demands a lot from its professionals, resulting in psychosocial risk factors related to the emotional aspect, the pursuit of excellence in the care provided, the accelerated pace of work, and situations that require the professional to constantly face suffering, pain, and death[5]. In addition to representing the driving force in hospital services, this emphasizes the crucial need for targeted research to examine working conditions and identify the risk factors that contribute to the illness of these professionals.

Currently, the link between work and episodes of illness has been a widely debated subject in several studies. This highlights the need to thoroughly understand each problem identified in the work environment,[6] in order to prevent workers from becoming ill, both in terms of mental and physical health. Preserving mental health stands out as one of the greatest concerns, since its ramifications can lead to abandoning the profession in the workplace.[7]

Nursing professionals constantly face risks, especially those working in hospitals, due to direct contact with patients and the performance of stressful and demanding activities. Night shifts, staff shortages, lack of adequate infrastructure, intense emotional burden, work overload, among other factors, contribute to the illness of nursing workers, creating unfavorable conditions for their health in the workplace.

In view of this, considering the scarcity of studies on this topic (working

conditions x risk of illness), the importance of analyzing working conditions and the risks of illness among nursing professionals is justified, in order to provide knowledge that contributes to the promotion of the health of these workers. It is believed that this study may improve working conditions, reduce the risk of illness, increase satisfaction in the work environment, resulting in a better quality of care provided to users of health services. Thus, the objective was to evaluate the working conditions and risk factors for illness among nursing professionals.

METHOD

This is a cross-sectional study with a quantitative approach. The study was conducted at a hospital in a municipality located in the Southwest of Minas Gerais. This municipality has an estimated population of 90,000 inhabitants. In the area of health, it is a city with resources for the treatment of various diseases, with two hospitals and an Emergency Care Unit (UPA).

The hospital that was part of the study is a medium-sized general hospital, a reference in urgency/emergency care, with 70% of the care provided coming from the Unified Health System (UHS).

The study population consisted of nursing professionals working at the aforementioned hospital. These included nursing assistants, technicians, and nurses who worked at any time at the hospital. The research institution currently has a population of 168 nursing professionals. The study sample was by convenience; all participants were invited to participate in the research.

For this purpose, the following inclusion criteria were adopted: nursing professionals (assistants, technicians, and nurses) who worked at the health institution, with more than three months of work at the institution (due to the hiring period). Exclusion criteria included workers who were on sick leave, maternity leave, or vacation, and those who did not agree to participate in the research. After applying the criteria, the study sample consisted of 90 nursing professionals, or 53% of the total population.

Two instruments were used for data collection: a semi-structured questionnaire with 33 questions, developed by the researchers to assess sociodemographic, epidemiological, occupational, and working conditions data of nursing professionals, containing the following variables: sociodemographic - gender, age, marital status, religious belief, number of children, monthly family income, and type of housing.

The epidemiological variables were: alcohol consumption, cigarette consumption, physical activity, chronic disease, and daily medication use; occupational - professional category, length of time in nursing, length of time working in nursing at the institution, weekly working hours, daily working hours, work period/shift, area of activity, and whether they have another job.

Regarding satisfaction with the working conditions offered, whether the unit provides PPE (Personal Protective Equipment) and whether it is used, whether the workplace is clean and organized, whether one feels safe at work, whether one feels valued, whether one feels overloaded at work, whether the service assistance is impaired by excessive work, whether one is separated from family and friends due to work, whether one can concentrate during work, whether one has suffered a work accident, whether one adheres to the unit's biosafety standards, whether one has a second job, whether one considers oneself to be in complete physical, mental and social well-being, and whether one has acquired any trauma or illness related to work.

It is worth noting that this instrument underwent a refinement process to verify whether its items represent the universe of content and allow for the achievement of the stated objectives. This procedure aims to evaluate the clarity, comprehensiveness, and objectivity in relation to what it proposes to identify[8].

For this evaluation, the instrument was sent to a group of five judges with experience in constructing research instruments and expertise in the subject matter. They will evaluate the ease of reading, presentation format, clarity, and content of the instrument to be applied to healthcare workers, using an evaluation form.

Subsequently, the instrument was submitted to a pilot test with 10 professionals. This was to verify the effectiveness of the instrument, the best way to collect and record data, the professionals' understanding of the questions, and to analyze vocabulary

appropriateness. The pilot test aims to test the research instrument on a small population to prevent the research from being conducted with false results and to make it error-free[9].

The second instrument used was the Work and Illness Risk Inventory (WIRI), with the objective of being an auxiliary diagnostic tool for critical indicators at work. Its first version was developed in 2003 by Ferreira and Mendes, and after re-evaluations and improvements, it reached its final version in 2007, using factor analysis, the Principal Axis Factoring (PAF) method, oblimin rotation, and analysis of factor reliability using Cronbach's Alpha. In this way, it is possible to investigate work and illness risks in terms of representing the work context and its physical, cognitive, affective demands, experiences, and harms.[10]

For this research, in order to verify the risks of illnesses aligned with occupational health, the factors from the scales that reflect and/or have repercussions on physical damage, described below, were used:

a) Work Context Assessment Scale (WCAS) - Factors: Work Organization and Working Conditions. The first factor lists 11 (eleven) affirmative items, seeking to measure the rigor/intensity of how the work is performed, while the second factor, composed of 10 (ten) affirmative items, aims to assess the conditions of physical structure and materials under which workers are subjected. These two factors of the EACT are measured using a 5-point Likert scale, ranging from "never" to "always".

This scale, as well as all its factors, has eigenvalues of 1.5, a total variance of 38.46%, a Kaiser-Meyer-Olkin (KMO) of 0.93, and factor loadings above 0.30. Cronbach's alphas are 0.72 for Work Organization and 0.89 for Working Conditions. The items of each factor were evaluated using a five-point frequency scale with negative items, whose factor score is obtained by averaging the items. Its analysis should be done from three levels that consider the midpoint and standard deviations in relation to the midpoint. This classification involves the levels severe (factor score above 3.70), moderate or critical (scores between 2.30 and 3.69), and positive or satisfactory (score below 2.30)[10]. Work Context Assessment Scale (WCAS) - Factors: Work Organization and Working Conditions. The first factor lists 11 (eleven) affirmative items, seeking to measure the rigor/intensity of how the work is carried out, while the second factor,

composed of 10 (ten) affirmative items, aims to assess the conditions of physical structure and materials under which the workers are subjected. These two factors of the EACT are measured using a 5-point Likert scale, ranging from "never" to "always".

b) Human Cost at Work Assessment Scale (HCWAS) - Factor: Physical Cost. This factor is composed of 10 (ten) affirmative items that measure the demands of activities involving the physical movement of the worker, in order to indicate the physiological and biomechanical wear and tear during the workday. This factor of the EACHT is also measured by a 5-point Likert scale, ranging from "never" to "always". This scale, as well as its analysis factor, has eigenvalues above 2.0, a total variance of 44.46%, a KMO of 0.91, and factor loadings above 0.30. Cronbach's Alpha for this factor is 0.91. The items of this factor were evaluated using a five-point scale of the level of demand for human cost at work indicators, with negative items, whose factor score is obtained by averaging the items. Its analysis should be done based on three levels that consider the midpoint and standard deviations from the midpoint. This classification involves the levels severe (factor score above 3.70), moderate or critical (scores between 2.30 and 3.69) and positive or satisfactory (score below 2.30)[10].

c) Work-Related Injury Assessment Scale (WRIAS) - Factor: Physical Injury. This factor is composed of 12 (twelve) affirmative items that address pain and biological disorders caused by performing work activities. This WRIAS factor is measured using a 7-point Likert scale, ranging from "never" to "six or more times," considering the last three months of work at the time of the research. This scale, as well as its analysis factor, has eigenvalues of 1.5, a total variance of 50.09%, a KMO of 0.95, and factor loadings above 0.30. Cronbach's Alpha for this factor is 0.88. Its analysis was performed using four levels that consider the midpoint in a breakdown into two intervals applying a variation of one standard deviation. For damage indicators, this classification involves the most negative assessment levels (factor score above 4.10), most severe assessment (between 3.10 and 4.0), moderate or critical (scores between 2.0 and 3.0) and most positive assessment, tolerable (score below 1.99)[10].

The nursing coordination was asked for a list of all professionals working at the institution and their respective sectors and work shifts. Data collection was carried out

using two instruments that were distributed by the researchers to the professionals who agreed to participate in the research.

The nursing professionals themselves completed these instruments, as they are considered easy to understand and fill out. However, the researchers were at the hospital to help with any questions.

The data collected by the instruments were entered into a Microsoft Excel spreadsheet, version 2010, to create the database. For this, the selection, categorization, and tabulation of the data were carried out. Subsequently, the STATA software, version 10, was used for descriptive and inferential statistical analysis. To assess reliability using the ITRA, Cronbach's Alpha Coefficient was used to evaluate internal consistency and whether the data were correlated with each other. The value achieved can range between zero and one; the higher the value, the greater the internal consistency and reliability of the instrument. It is recommended that the Cronbach's Alpha value be above 0.70[10].

Descriptive analyses of the variables were performed using absolute and relative frequencies for qualitative variables and measures of central tendency (mean, median, minimum, and maximum) and dispersion (standard deviation) for interval variables. For the regression analyses, multiple regression was chosen, given the nature of the dummy variables. The dependent variables of the study were the ITRA factors, namely, work organization, work condition, physical damage, and physical cost, while the independent variables were those of sociodemographic, epidemiological, work activity, and working conditions characteristics. The selection of independent variables, which were also dichotomized, was performed using the Bayer method.

Thus, all independent variables were included in the analysis. Possible combinations of variables were selected until those with a fit to the model were reached. For the final model obtained. Subsequently, the quality of fit of the models was evaluated using the pseudo-determination coefficient (pseudo R^2). For all analyses, a significance level of 5% was adopted, that is, the data were statistically significant for $p<0.05$.

The research followed all ethical aspects of research with human beings, submitted to the evaluation and appreciation of the Research Ethics Committee of the

State University of Minas Gerais, obtaining a favorable opinion, according to opinion no. 6,084,637 and CAAE no. 69599123.8.0000.5112, all ethical aspects were followed.

RESULTS

Through the analysis of the results, it was possible to observe that the majority of nursing workers are female (78.89%), are between 20 and 29 years old (37.77% - average of 35.35 years, standard deviation of 9.66 years), are single (47.78%), Catholic (70%), do not have children (41.11%), have a monthly family income between 1,501 and 3,000 BRL (42.21% - average of 3,287.57 BRL, standard deviation of R$2,190.00), are the main breadwinners (52.22%) and own their own home (66.67%).

It was found that the majority of nursing workers consumed alcoholic beverages (66.67%), with moderate consumption frequency (51.11%); did not use tobacco (75.55%); practiced physical activity on some days of the week (32.22%); they are not at their ideal weight (53.33%) and most have increased their weight (60%).

Most nursing workers did not have chronic disease (71.11%), and of those who did have chronic disease, hypertension was the main disease (15.56%). Most did not use continuous medication (55.55%), and the antihypertensive pharmacological group was the most cited among the participants (15.56%).

Table 1 – Distribution of nursing professionals according to the characteristics of their work activities. Southwest Minas Gerais, MG, 2023, (n=90)

Variables	f	%
Professional Nursing Category		
Nurse	28	31.11
Technician	57	63.33
Assistant	5	5.56
Total	90	100
Years working ass nurse		
Up to 10	61	67.77
11 - 20	20	22.21

21 or more	9	9.99
Total	90	100
Years working at the institution		
Up to 10	76	84.45
11 - 20	7	7.77
21 or more	7	7.77
Total	90	100
Weekly workload (hours/week)		
Up to 40	17	18.89
42	1	1.1
44 or more	72	80.00
Total	90	100
Daily workload (hours)		
8	16	17.78
9 - 11	2	2.22
12 or more	72	80.00
Total	90	100
Work shift		
Morning - 7 - 13h	4	4.44
Afternoon - 13 - 19h	0	0
Daily shift - 7h -19h	67	74.44
Night shift - 19h - 7h	19	21.11
Total	90	100
Constract		
Temporary	73	81.11
Effective	17	18.89
Total	90	100
Other employment		
Yes	29	32.22
No	61	67.78
Total	90	100
Weekly workload (hours/week) *		
Up to 40	20	22.21
44 or more	9	9.99
Total	29	100

Table 1 showed that the majority of nursing workers were nursing technicians (63.33%), with up to 10 years of experience in nursing (67.77%), up to 10 years of service at the institution (84.45%), a weekly work schedule of 44 hours or more (80%),

a daily work schedule of 12 hours or more (80%), a day shift from 7 am to 7 pm (74.44%), and a temporary employment contract (81.11%). Most of them did not have another job (67.78%), and those who did have another job had a weekly work schedule of up to 40 hours (22.21%).

Table 2 – Distribution of nursing professionals according to working conditions. Southwest Minas Gerais, MG, 2023, (n=90)

Variables	f	%
Satisfaction with the work		
Yes	76	84.44
No	14	15.56
Offer of PPE		
Yes	88	97.78
No	2	2.22
Use of proper PPE		
Yes	86	95.56
No	4	4.44
Clean workplace		
Yes	81	90.00
No	9	10.00
Organized workplace		
Yes	81	90.00
No	9	10.00
Safe workplace		
Yes	74	82.22
No	16	17.78
Feel appreciated at workplace		
Yes	54	60.00
No	36	39.90
Work overload		
Yes	44	48.89
No	46	51.11
Feel impaired assistance		
Yes	46	51.11
No	44	48.89
Feel concentrated at work		
Yes	75	83.33
No	15	16.67
Work accident		
Yes	34	37.78
No	56	62.22

Biosafety		
Yes	79	87.78
No	11	12.22
Feel mental and social wellbeing		
Yes	52	57.78
No	38	42.22
Trauma at work		
Yes	28	31.46
No	62	68.54

Table 2 shows that most nursing staff were satisfied with their workplace (84.44%), the workplace had PPE (97.78%), used PPE appropriately (95.56%), the workplace was clean (90%), organized (90%), safe (82.22%), felt valued at work (60%), experienced work overload (48.89%), felt their care was impaired (51.11%), felt focused on their work (83.33%), most had never had a workplace accident (62.22%), had biosafety measures in place (87.78%), felt good in their physical, mental and social well-being (57.78%), and most had not experienced any work-related trauma (68.54%).

Table 3 – Descriptive classification of variables related to the Work Context Assessment Scale. Southwest of Minas Gerais, MG, 2023, (n=90)

	Work Organization Factor		
Classification	**f**	**%**	**Cronbach's alpha**
Severe	12	13.33	0.81
Moderate or critical	63	70.00	
Positive or satisfactory	15	16.67	
Total	90	100	
	Work Conditions Factor		
Classification	**f**	**%**	**Cronbach's alpha**
Severe	1	1.11	0.81
Moderate or critical	36	40.00	
Positive or satisfactory	53	58.89	
Total	90	100	
	Phisical Cost Factor		
Classification	**f**	**%**	**Cronbach's alpha**
Severe	54	60.00	0.85
Moderate or critical	31	34.44	
Positive or satisfactory	5	5.56	
Total	90	100	
	Physical Damage Factor		
Classification	**f**	**%**	**Cronbach's alpha**
Negative	1	1.11	0.78
Severe	28	31.11	
Moderate or critical	32	35.56	
Positive or tolerable	29	32.22	
Total	90	100	

In the classification of workers, according to the Work Organization factor, it was found that 70% of them were at moderate to critical levels of risk of work-related illness. According to the Working Conditions factor, 40% of them were at moderate to critical levels of risk of illness due to working conditions. The Physical Cost factor showed that 60% of them were at serious levels of risk of illness due to the physical costs imposed by work. The Physical Damage factor showed that 35.56% of workers were at moderate and critical levels, while 31.11% were at serious levels of risk of illness due to physical damage caused by work.

When evaluating the internal consistency of the WIRI using Cronbach's Alpha, it was considered that there was internal consistency, homogeneity, and reliability of

the instrument in its factors, since the values were above 0.70, as well as the overall value of the inventory, with all factors included, which presented a Cronbach's Alpha of 0.86.

Table 4 – Evaluation of the parameters of the multiple regression model of the independent variables with the work organization factors. Southwest of Minas Gerais, MG, 2022, (n=90)

Variables	Coef.	Standard error	T	P-value	95%CI
Age	0.0280623	0.0136877	2.05	0.044	0.0553907 0.0007339
Acoholic beverage Weekly	0.7716553	0.2655807	2.91	0.005	1.301904 0.2414064
Time of professional	0 .0375077	0.0141309	2.65	0.010	0.0092945 0.0657209
Work overload Yes	0.3500741	0.1526082	2.29	0.025	0.6547661 0.045382
Work appreciation No	0.6557574	0.1505273	4.36	0.000	0.35522 0.9562949
Work accidents	0.2873918	0.1425551	2.02	0.048	0.0027712 0.5720123

After analyzing the association between the independent variables and the work organization factors, using the multiple regression model, it was found that the variables: age, alcohol consumption, length of service, workload, job valuation, and workplace accidents, showed an association with the work organization factor of hospital nursing professionals ($P < 0.05$), resulting in a final adjusted model (Table 4).

Table 5 – Evaluation of the parameters of the multiple regression model of the independent variables with the physical labor cost factors. Southwest of Minas Gerais, MG, 2022, (n=90)

Variables	Coef.	Standard error	T	P-value	95%CI	
Age	0.0334789	0.0174228	1.92	0.050	0.0682647	0.0013068
Alcoholic Beverage						
Too much	0.8280177	0.3380521	2.45	0.017	1.502961	0.1530749
Physical Activity						
None	0.5663489	0.2556423	2.22	0.030	0.0559425	1.076755
Work overload						
Yes	0.476253	0.1942518	2.45	0.017	0.8640892	0.0884168

The association between the independent variables and the physical cost factors of work, through the multiple regression model, showed that the variables: age, alcohol consumption, physical activity, and workload, demonstrated an association with the physical cost factor of work for hospital nursing professionals ($P < 0.05$), resulting in a final adjusted model (Table 5).

It should be mentioned that the other factors, i.e., working conditions and physical damage, did not show a significant association with the independent variables ($P > 0.05$).

In general, the results obtained allow us to identify the direct relationship between working conditions and risk factors for illness among nursing professionals. Aspects such as workload, work organization, continuous physical effort, and lack of professional recognition are associated with higher levels of physical and psychological wear and tear, compromising the well-being and quality of life of these workers. The findings showed that the conditions under which the work is performed influence both the physical cost and the damage to the health of professionals, configuring a scenario of occupational vulnerability. Thus, the results directly address the study's objective, providing support for planning actions aimed at promoting health and improving the work environment.

DISCUSSION

When evaluating working conditions and their relationship with risk factors for illness among nursing professionals, the findings reinforce the importance of understanding the work context as a central determinant of these workers' health. The following discussion seeks to articulate these results with the scientific literature, highlighting convergences and contrasts that contribute to understanding the phenomenon studied.

Regarding the sociodemographic aspects of nursing professionals, it was found that most of them were female, aged between 20 and 29 years, single, and Catholic. Most had no children, with a family income between 1,501 and 3,000 BRL, most being the head of household and owning their own home.

The data found in this study are consistent with an epidemiological, descriptive, and retrospective study, developed in 2020 at the Occupational Health Reference Center (CEREST) in Sobral – Ceará, Brazil, during the period from March to May 2020, with 102 cases of nurses who were victims of work accidents involving exposure to biological material, reported in the Notifiable Diseases Information System, whose research demonstrated that women constitute the majority in nursing throughout the country, representing the largest share of work in this profession, and that the age range most prevalent was between 20 and 29 years[11].

Findings from a study that assessed the empathic concern of nurses in the sample and sociodemographic characteristics indicated that most were married (75%), contradicting this study which revealed that most were single[12].

The sociodemographic profile of nurses working in primary health care in the Federal District reveals that most professionals identify as Catholic, corroborating the findings of previous studies on the religious background of this group13. In addition, another study that analyzed the quality of life of nurses in intensive care units indicated that most nurses do not have children and have a family income of one to three minimum wages, which aligns with observations made in similar investigations[14].

Regarding nurses' remuneration, their earnings distribution is as follows:

55.7% receive a monthly remuneration of up to 2,000 BRL; 39.4% earn salaries in the range of 2,001 to 5,000 BRL; only 4.8% have incomes exceeding 5,001 BRL[15].

According to the lifestyle variables, it was noted that most consume alcoholic beverages with moderate frequency, do not use tobacco, and practice physical activity, but do not consider themselves to be at an adequate weight. In line with this, the study conducted by Tobias and colleagues16 carried out in Brazil with doctors and nurses from two hospitals in the state of Maranhão found a rate of 16.7% of inappropriate alcohol use among men and 6.1% among women. In addition, a study with nursing professionals in Minas Gerais revealed a risk of excessive alcohol consumption 4.3 times higher among men compared to women17. The work schedule, individual characteristics, and abusive alcohol consumption were associated in a study[6].

Regarding the practice of physical activity, even aware of the advantages provided by regular exercise, most professionals choose not to engage in this routine, many justifying the lack of participation in physical activities due to the scarcity of available time.

This study identifies that 28.89% of nursing professionals reported having chronic diseases, with hypertension and diabetes mellitus being the most common among them. In the daily work routine of the nursing team, several factors associated with work practices can contribute to the onset of hypertension. Among these factors, stress, emotional exhaustion, work overload, and commitment to multiple jobs stand out, among others, which are frequently present in the work environments of these professionals and can result in complications during their activities, such as heart attacks and hypertensive crises.[18]

Regarding the continuous use of medications, only 44% of the participating professionals reported using them, including the pharmacological group of antihypertensive drugs, contraceptives, antidepressants, and anti-hyper/hypothyroidism drugs. In one survey, results showed that most nursing professionals self-medicate with analgesics, antidepressants, antipyretics, contraceptives, and antibiotics19. Factors contributing to self-medication include work-related stress, work overload, and lack of time to seek medical consultation[19].

When examining the data related to the work characteristics of nursing professionals in this study, most were classified as nursing technicians, with up to 10 years of experience in nursing and at the institution. A descriptive field study with a quantitative cross-sectional approach, in which 54 nursing professionals from a medium-sized hospital in the State of Maranhão[20] were interviewed, is relevant to the findings of this research. Furthermore, half of the employees had a weekly workload of 44 hours or more, and most of them were scheduled for 12 hours or more of service per day. These characteristics are similar to those of a cross-sectional, descriptive study conducted with 83 nurses from a hospital[21]. Most professionals were allocated to the day shift and 32% of them held a second job.

Regarding working conditions, it was observed that most nursing workers are satisfied with their workplace, PPE is provided and used appropriately. Concerning the workplace, most consider it clean, organized, and safe; they feel valued and do not feel overwhelmed at work; most feel their care is impaired; they feel focused; most have never had a workplace accident; biosafety standards are adopted in the workplace; 52% feel physically, mentally, and socially well; and they have not experienced trauma at work.

In a study conducted using accident notification forms for work involving biological material from municipalities in southern Brazil, it was found that the frequency of non-use of personal protective equipment at the time of the accident was high.[22] The use of personal protective equipment is very important, as we know it is a protective barrier that can reduce contact with blood, body fluids, and other excreta, and in some circumstances, significantly reduce exposure to existing risks in the work environment.[23]

In a survey of working conditions in primary health care units, it was found that work is carried out with job role deviations, lack of organization, and excessive bureaucratic activities3. In addition to dealing with deficient, poorly lit, noisy, and poorly ventilated physical spaces, using defective, inadequate, or maintenance-necessary instruments and/or equipment3. There is also a lack of human, material, and furniture resources, living daily with the risk of contamination and being subjected to

physical, chemical, biological, physiological, psychological, and mechanical loads, with a predominance of the latter[24].

Regarding work organization, most participants report an excessive work pace, tasks rarely have deadline pressure, sometimes there is demand for results, tasks are often rigid, and there is always performance monitoring. Most reported that the number of people is insufficient to carry out the tasks, sometimes the results are unrealistic, there is often a division between those who plan and those who execute, the tasks are repetitive, sometimes there is a lack of time for rest, and tasks often suffer from discontinuity. In the classification of workers, it was found that a large part of them were at moderate to critical levels of risk of illness due to the conditions of work organization.

Work organization is not limited exclusively to the way tasks are performed, distributed or planned, but also includes the division of labor functions and the hierarchical structure and the exercise of power. This means that by establishing the division of activities, barriers are also established between individuals. Therefore, the organization of work encompasses the tasks performed by employees, including the dynamics of work relationships, both in relation to the way in which the work activity itself is conducted, and to the interpersonal connections that develop. Therefore, the organization of work cannot be conceived in a purely technical way, only considering the operationalization of tasks, since it has technical aspects, but also involves a human dimension that modifies it and gives it concreteness.[25]

Regarding working conditions, most workers stated that they are never precarious, that the environment is never uncomfortable and is not noisy, the furniture is adequate, and sometimes the work tools are insufficient. Most reported that the workstation is inadequate, the equipment for carrying out tasks is sufficient, the space is adequate to perform tasks, the working conditions never pose a risk to people's safety, and the consumable material is sufficient. Workers were largely classified as having moderate to critical levels of risk of illness due to working conditions.

The work environment, as a whole, encompasses various circumstances that adversely affect the quality of life of the employees who are part of it. Many of these

situations are the responsibility of public health authorities, such as the challenge of violence that permeates the daily lives of health institutions. The nurse, in this context, is vulnerable to attacks from both their team colleagues and the patients they serve15. In a study that sought to assess professionals' perception of their level of safety in relation to violence, only 29% – that is, less than a third of the team – reported feeling protected in the work environment, while 21.8% stated that they felt safe "sometimes" and 40.1% admitted that they did not feel protected[26].

In this study, regarding the physical cost, it is identified that 28.9% use physical force at work, frequently use their arms continuously, remain in a bent position, walk frequently, are required to stand, rarely handle heavy objects, most exert physical effort, use their legs continuously, always use their hands repeatedly, and continuously go up and down stairs. In the classification of workers, most of them were at serious risk levels of illness due to the physical costs imposed by work.

According to the study, physical damage may be related to the particularities of nurses' work, which presents ergonomic risks. Nursing activity requires speed, skill, patient movement, an intense work pace, and repetition of tasks, implying long periods standing and large displacements, factors that can result in physical wear and tear27. Employees experience discomfort in different areas of the body, being more prevalent in individuals with shifts exceeding 12 hours a day and/or with two different jobs. According to research, nurses suffer musculoskeletal symptoms in various parts of the body, such as the neck and cervical area, the lumbar region, the hip, and the lower extremities such as ankles/feet[28].

Regarding physical damage, most experienced body aches, arm pain, headaches, no respiratory or digestive problems, no back pain, no hearing disturbances, no loss of appetite, and no visual disturbances. 24% had sleep disturbances, most had leg pain, and no circulatory disorders. It was found that 35.56% of workers were at moderate and critical levels, while 31.11% were at severe risk of illness due to physical damage caused by work.

Physical damage presents a worrying picture in relation to this group of employees. A study conducted with healthcare professionals in high-level hospitals in

China identified a high incidence of musculoskeletal disorders, which were correlated with workload, ergonomic aspects, psychosocial factors, and temporary employment contracts. As a result, healthcare professionals who faced significant levels of psychological exhaustion appeared to be more susceptible to developing musculoskeletal disorders, highlighting the connection between physical problems and psychosocial factors[29].

A research conducted with nursing staff in Southeast Brazil identified unfavorable conditions, both in the physical and psychosocial aspects of the work environment, which had a negative impact on professional performance capacity and the intention to leave the profession[5].

In the present study, a significant association was evidenced between the independent variables and the factors related to work organization. In which it was revealed that the variables age, alcohol consumption, length of service, workload, job appreciation, and workplace accidents showed a statistically significant association with the work organization factor of hospital nursing professionals. Therefore, it reinforces the importance of the hospital institution organizing a work environment according to the needs of nursing professionals. This contributes to increased productivity, but also improves job satisfaction, since professionals felt more empowered and valued in their roles.[20]

Furthermore, work organization can contribute to the mental and physical health of nursing professionals. As well as being closely linked to patient safety. Investing in work organization strategies can result in continuous improvements in the quality of services provided and the operational efficiency of health institutions[25].

Moreover, research on the association between independent variables and the physical cost factors of work indicated that the variables age, alcohol consumption, physical activity, and workload showed a significant association with the physical costs faced by hospital nursing professionals. The factors that lead to the physical costs faced by hospital nursing professionals reflect not only the associated factors, but also the impacts on the quality of life of these professionals and the care provided, which can result in high turnover and absenteeism rates, generating additional costs for health

institutions. In short, the physical costs faced by hospital nursing professionals have profound implications for all involved. It is important to implement effective prevention and support strategies, as it is possible to improve the quality of life of these professionals and, consequently, the quality of patient care[30].

Study limitations

The study conducted presented some limitations regarding its population and sample. Although it provided considerable results and valuable contributions to improving working conditions and reducing the risks of illness among nursing professionals, there are important limitations that should be mentioned:

The sample used in the study was relatively small, although it represents more than 50% of the population. However, this restricts the ability to generalize the results beyond the population in question. This occurred due to cost constraints and the lack of availability of some professionals to answer the questionnaire.

The time available for conducting the research can also be considered a limitation, since nursing professionals have busy and demanding routines, which may have affected data collection and participation in the study. The research focused on a single hospital institution, which limits the ability to generalize the results to other institutions. The specific hiring rules and distinct work environments may not be representative of other institutions.

Therefore, it is necessary to continue building knowledge for nursing professionals and managers regarding the satisfaction and health of these professionals. In addition to implementing programs aimed at promoting a healthy work environment, reducing occupational risks, valuing the profession, and raising awareness among managers about the importance of favorable working conditions and providing satisfactory conditions, motivational factors, as well as a better quality of life and health for nursing professionals working in hospital settings.

For future research, it may be useful to consider strategies to overcome these limitations, such as increasing the sample size, seeking the participation of

professionals from various institutions, and adjusting data collection according to the professionals' routines. This can contribute to more comprehensive and applicable results in a broader context.

FINAL THOUGHTS

The results of this research revealed that the working conditions of nursing professionals at the investigated hospital institution present significant challenges that are directly or indirectly linked to the risk of illness. Aspects such as long working hours, overall job satisfaction, perceived excessive work pace, and lack of time for breaks proved to be concerning. In addition, continuous physical exertion and the frequent occurrence of pain in the body, arms, and legs are associated with this professional activity. It is important to highlight that these conditions can have negative impacts on the physical and mental health of nursing professionals, increasing the risk of illness.

It is worth highlighting the risks of illness to which the professionals were exposed. Attention is drawn to the factors of organization and working conditions, in which many workers were at moderate and critical risk, as well as to the factors of physical damage and costs, which led them to more serious levels of risk of illness caused by work.

Based on these results, it is imperative to consider the implementation of actions aimed at mitigating the negative impacts of these working conditions. Improving the physical and mental health of nursing professionals is not just a matter of caring for these professionals, but also of ensuring the quality of health services provided to patients.

It is essential that managers and health professionals collaborate in creating healthier work environments, with a more equitable distribution of workload, psychological support, and the promotion of adequate breaks. By doing so, we can contribute to preventing illness among nursing professionals, thus ensuring quality

care and the well-being of these dedicated professionals.

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ASSESSMENT OF WORKING CONDITIONS AND RISK OF ILLNESS AMONG NURSING PROFESSIONALS

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