

SHIFT WORK, SLEEP AND COMPLAINTS OF THE NURSING TEAM IN A CITY IN THE INLAND OF THE NORTHEAST REGION OF BRAZIL

TRABALHO EM TURNOS, SONO E QUEIXAS DA EQUIPE DE ENFERMAGEM EM UMA CIDADE DO INTERIOR DA REGIÃO NORDESTE DO BRASIL

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Abstract: Introduction: Shift work can alter the health and work performance of health workers. Most studies on health changes in shift workers have focused on populations from large cities in states in the Southeast region. **Methodology:** In order to understand the complaints and vulnerabilities of health workers who work shifts in the interior of the Brazilian Northeast, a quantitative study based in a structured questionnaire on habits, work and sleep, was applied to 10 nurses and 35 nursing technicians and assistants in a public maternity hospital. **Results:** The main complaints were irritability (68%) and headache (56%), self-declared as a result of changes in the sleep-wake rhythm. Self-reporting of accidents at work was exclusive to the group of professionals who have more than one job and work between 61 and 80 hours per week. **Conclusion:** work overload influences sleep health, with probable consequences for the health of nursing staff who work shifts in a hospital in the interior of Northeast Brazil.

Keywords: Nursing; Occupational Health; sleep quality.

INTRODUCTION

Sleep, characterized by the reduction of voluntary movements of the body and lower perception of the environment, is considered as something indispensable for human existence because it performs numerous functions in the body. Sleep consists of an active brain state that focuses on two different and quantitatively measurable states, which involve biochemical mechanisms and modifications of physiological processes. This process is governed by the biological clock regulated by molecules such as melatonin, which in turn is synchronized with environmental clues (zeitgebers) such as working hours, meals and other daily activities ⁽¹⁾.

Based on metanalytic epidemiological studies, it is recommended a period of at least seven hours of continuous sleep per night ⁽²⁾, but no more than nine hours, because there is an association between these durations with the appearance of cardiovascular diseases and stroke ^(2,3). There are studies that have shown that an improvement in sleep reduces the risk of cardiovascular disorders ⁽⁴⁾. In fact, in a recent review of the scientific literature in the last 20 years ⁽⁵⁾, the authors have gathered a number of evidence that sleep quality improves many aspects of health, impacting metabolism, cognition, mental health, good mood and attention.

Despite the health benefits, a survey by the Brazilian Sleep Society (SBS) found that 43% of the population sleeps poorly and constantly shows signs of fatigue throughout the day ⁽⁶⁾. Many studies highlight associations between sleep duration and the development of various health problems, such as cardiovascular disorders, increased risk of stroke, incident arterial calcification, changes in inflammatory markers among other associated ⁽⁷⁾.

Sleep deprivation due to overwork and overload of working hours is common as causes of sleep disorders. There is a higher occurrence of sleep disorders in professionals with more than one job ⁽⁸⁾ or who work alternate shifts of the day and night type ⁽⁹⁾. The deprivation of nocturnal sleep has reflexes in the day shift, and there may be increased fatigue, decreased attention, less motor coordination and mental rhythm ⁽¹⁰⁾. In some categories of workers such as health professionals, sleep disorders are a frequent complaint ⁽⁸⁾. A recent review of the scientific literature found that 24-hour shift work regimes lead to sleep disorders in nursing workers, in addition to being linked to diabetes, metabolic disorders, cardiovascular problems and breast cancer ⁽¹⁰⁾. In addition to physical disorders, psychological disorders such as stress and family relationship problems also seem to affect workers who alternate day and night periods in their working hours ⁽¹⁰⁾.

Hospital work provides one of the most complex organizations in modern society and tends to affect the sleep rhythm of professionals who are subjected to shifts that are not always compatible with their physiological needs. The care of the hospitalized patient requires greater technical

aptitude, constant attention and dedication of the health professional, especially for the nursing category. In patient care, the nurse must provide direct assistance 24 hours a day, offering all the care relevant to his profession ⁽¹¹⁾. Thus, in order for care to be constant and integral, the nursing teams are organized in a work scale that usually oscillates in 24-hour shifts ⁽¹²⁾.

Shift work is a work organization system in which employees alternate their work schedules according to a pre-established standard. Instead of always working at the same time every day, workers are assigned to different shifts, which can include morning, afternoon, evening and even rotating shifts. This practice is common in several sectors, such as hospitals, in which it is necessary to ensure coverage 24 hours a day, 7 days a week ^(8, 12). In addition to the needs of hospital management, nursing workers perceive the advantages and disadvantages of working in shifts. Among the advantages, greater control over work decisions, less pressure and more contact with the patient in night shifts ⁽¹³⁾ were reported. In contrast, complaints of sleep disorders and fatigue were pointed out as disadvantages of this shift work regime ⁽¹³⁾.

There are few studies in Brazil that have shown that the interference in the quality of sleep in nursing service professionals is associated with a worsening in health and quality of care provided to the patient ^(8, 14). The attention of these articles is focused on professionals from the large cities in the south center of the country ⁽¹⁵⁾, whose pressures and pace of life are different from the smaller cities located in the interior of the Northeast region. Compared to the center-south of Brazil, the Northeast has lower indices of quality of life and health care, which reaches several layers of the population, including the professional categories of the health area ⁽¹⁶⁾.

In the present study it is proposed to evaluate the self-report of workers of the nursing team, in a maternity hospital in the interior of the Northeast region of Brazil of Alagoinhas, in the state of Bahia, on the quality of sleep, their circumstances and the influence of sleep on the quality of work. The study aimed to give voice to the nursing worker himself for his complaints related to the sleep pattern.

METHODOLOGY

The present study was approved by the Ethics Committee on Research Involving Human Beings of FACINTER/GRUPO UNINTER (Opinion N° 195/2010). This is a field study, exploratory, descriptive, cross-sectional, with a quantitative approach in professionals from the nursing team of a Hospital of the Municipal Network of the City of Alagoinhas, Bahia. The choice of this city was due to its medium size, with an estimated population of 153,023 inhabitants in 2021 ⁽¹⁷⁾ and the little attention given to studies in nursing professionals in the interior regions of Brazil.

The recruitment for the interviews was through posters posted in the work rooms announcing the type of research. The participation was voluntary, with professionals who worked in the ¹²⁸

surgical center, wards, nursery and administrative part. For eight days, the respondents wrote the answers in a questionnaire printed on sheets, consisting of 31 standardized questions, with open and unstructured answers. The questions, elaborated from a pilot study conducted by the authors, included items on demographic information, shift regime, work accidents, sleep habits, self-perception of sleep quality and the relationship with health.

The inclusion criteria covered professionals belonging to the staff of the hospital studied and who provided direct or indirect assistance to the patient. In the exclusion criteria were the professionals on vacation in the month of the survey. All respondents signed the Free and Informed Consent Form, spontaneously answering the questionnaire.

The data are presented in a descriptive way. The answers were evaluated on sex, age, professional training, work regime, quality of assistance, work accidents, number of jobs, weekly working hours, degree of satisfaction with sleep rhythm, sleep duration, ergonomics of the sleeping place and self-perception about the influence of sleep on health. The researchers, after analyzing the responses together, grouped them into categories that indicated a degree of quality in health or quantified the responses. Quantitative data are shown by numbers of responses and percentages, when applicable.

RESULTS AND DISCUSSION

Of the entire hospital team composed of 18 nurses and 75 nursing technicians of both sexes, 10 nurses and 35 nursing technicians (N=45), all female, aged between 25 and 57 years, participated. Of these, only six worked exclusively in the day shift (14%), while the others (84%) worked in shifts (day and night, alternately), in 12- or 24-hour regimes. On the day shift these professionals are free to rest if the service was less intense. At night, each professional is entitled to two hours of rest depending on the complications that may arise during this period.

Self-report of sleep quality

The evaluation of the relationship between satisfaction and sleep quality resulted in 11% (n=5) of respondents with unsatisfactory sleep, 40% (n=18) claiming to have regular quality and 49% (n=22) with satisfactory sleep (Table 1). In those who reported having an unsatisfactory sleep, four respondents have a light sleep and only one has a moderate sleep, but none has a deep sleep (Table 1). Of those who responded to have a regular sleep, none reported having a deep sleep, seven have a light sleep and 11 have a moderate sleep. Among the professionals who answered to have satisfactory sleep quality, only seven respondents consider sleep light and ten consider their sleep moderate. Only in respondents who report satisfactory sleep, self-reports of deep sleep (five people) can be found (Table 1).

Table 1: Self-assessment of sleep satisfaction, its relationship with quality and the method used to wake up by the female nursing team in a hospital in the city of Alagoinhas, Bahia, Brazil.

Sleep Satisfaction	Sleep Quality			Method used to wake up	
	Light	Moderate	Heavy	Spontaneous	Alarm Clock
Satisfactory	32%	45%	23%	55%	45%
Regular	39%	61%	0%	17%	83%
Unsatisfactory	80%	20%	0%	0%	100%

Source: Data collected Prepared by the authors, 2024.

In addition, due to the work regime of the nursing category being on duty, it is common for professionals to stay 24 hours or more without sleep and when they sleep, sleep does not seem to be deep (18). This finding made by other studies is a perception that the professionals of this study also had, which seems to be a desirable sleep, that is, a deep and restorative sleep.

Most (78%; n=35) reported a satisfactory falling asleep, but 22% (n=10) of the professionals answered not being able to sleep after the shift. Of the 78% who said they slept satisfactorily after the shift, a total of 52% (n=18) sleep only four hours and 34% (n=12) sleep 8 hours. There is a small percentage (14%) who sleep more, since 11% (n=4) of respondents said they slept 10 hours and one of them reported sleeping 15 hours.

Considering that the recommended amount of sleep per night is seven hours ⁽¹⁾, more than 50% sleeps less, indicating a deficient sleep regime in the professionals in this study. On the other hand, excess sleep time affects a part of the professionals, suggesting a mismatch in the sleep pattern, since there are also health problems linked to excessive time in sleeping ⁽³⁾. In add, most of the respondents who said "sleep normally" have sleep maladjustments. Another aggravating factor that this picture of the sleep-wake rhythm after work in which there are reports of difficulties in falling asleep, suggests that around 1/5 of the nursing workers in this hospital suffer from insomnia.

The lowest percentage of nursing professionals (20%) reported having an excellent sleep, while 42% (n=19) reported having a good quality sleep and 38% a bad sleep. This report was accompanied by different perceptions about income at work. Those who had excellent sleep reported having good to excellent work income, 22% to 78% respectively. Those who declared to have a good sleep, reported having good to excellent sleep, 84% (n=16) to 16% (n=3) respectively.

The difficulty of the professionals to sleep was evaluated, analyzing the self-report of the time it takes to fall asleep when lying in bed. The difficulty in starting to sleep was answered by 44% of professionals, which suggests evidence of impairments in sleep-wake rhythm. This problem can be triggered due to work overload and a regime of constantly alternating shifts, and over time, complaints such as sleep disorders may arise ⁽¹⁹⁾. This statement is verified as 70% of these 130

professionals with sleeping problems work on duty with alternating shifts. Among those who reported difficulty sleeping, 65% (n=13) work between 40 and 60 hours per week, 25% (n=5) work above 60 hours per week and 10% (n=2) work below 40 hours. This result is suggestive that the difficulty in sleeping may have a connection with work overload, as was observed in another study⁽¹⁸⁾.

When evaluating the link between the method used to wake up and the degree of sleep satisfaction (Table 1), professionals who report a satisfactory sleep, 55% (n=12) wake up spontaneously and 45% (n=10) wake up only when they are awakened by someone or by an alarm clock (watch, smartphones, etc.). Among respondents who report a regular sleep, only 17% (n=3) wake up spontaneously while 83% wake up when they are awakened. All professionals with an unsatisfactory sleep wake up only when called by someone or by the sound of an alarm clock. With this survey it is suggested that the small percentage of professionals of the nursing team who wake up spontaneously, have a satisfactory sleep, given that their organisms are used to the routine and apparently their sleep was sufficient. On the contrary, the majority (67%) wake up only when some interference occurs, not appearing to have enough sleep. It has already been shown that spontaneous awakening at pre-programmed times is an indication of good quality of sleep, unlike those who have difficulty sleeping⁽²⁰⁾. Therefore, a qualitatively good sleep does not seem to be a characteristic of most of this nursing team, considering the set of responses of the records reports of the quality of sleep, the difficulty in falling asleep and the way they are awakened.

Ergonomics of sleep at home

Studies have proven that one of the causes of low sleep quality is linked to the ergonomics of the sleeping environment, such as bed, mattress, type of enclosure and noise⁽¹⁹⁾. After evaluating the influence that the change in sleep-wake rhythm during professional practice, the sleep of nursing professionals outside the work environment was investigated after the shift. Therefore, he wondered about the comfort of the sleeping place in the residence of the respondents. In the self-report, the majority (N=44; 91%) of the team responded to sleep in comfortable home places and only one of the respondents considered sleeping in an uncomfortable place. It is inferred from these answers that there are ergonomic conditions for a good quality night's sleep in home night rest for most of the interviewed team.

Workload, sleep and performance

To evaluate the workload, the nursing team reported the amount of hours worked per week. Most of the team (80%) reported (Table 2) working above 40 hours/week, exceeding the ceiling recommended by the Federal Council of Nursing (COFEN), a class body that regulates and supervises the nursing profession ⁽²¹⁾. COFEN highlights in decision N° 0196/2013 that: "Art. 1° The working day of the employees of the Federal Council of Nursing is 40 (forty) hours per week, being 08 (eight) hours per day, from Monday to Friday, from 8 a.m. to 5 p.m." The bill 2,564/2020, which was approved on May 4, 2022 by the Federal Chamber of Deputies of Brazil, but is sub judice, establishes a working day of 30 hours per week.

Table 2: Self-assessment of the work overload of the female nursing team in a hospital in the city of Alagoinhas, Bahia, Brazil.

Number of employment relationships		Number of weekly hours worked	
1 bond	44%	Less than 40 hours	20%
2bonds	51%	40 to 60 hours	56%
3bonds	5%	61 to 80 hours	24%

Source: Data collected Prepared by the authors, 2024.

In addition to the overload in working hours, most professionals (56%) are linked to two or three jobs. In nursing, the workload in Brazil alternates between thirty and forty hours per week, being more common the working day of 36 to 40 regular weekly hours ⁽⁸⁾. Therefore, the results of this study show an overload of hours worked by the nursing team, suggesting another risk factor for loss in their sleep, quality of life and efficiency of care in the service ⁽¹⁴⁾.

Thirty-one percent (n=14) of respondents work from one to two shifts, 36% (n=16) from three to four shifts and 29% (n=13) work above four weekly shifts. Regarding the number of weekly shifts, most 65% (n=29) have a work regime with one to two night shifts, 13% (n=6) of three to four and 9% (n=4) work above four night shifts (Table 3). Thirteen percent (n=6) of respondents work only on day shifts (Table 3). Only two respondents reported not working on shifts, a work regime usually reserved for workers in the administrative function.

Table 3: Self-assessment of the number of shifts and work shifts of the female nursing team in a hospital in the city of Alagoinhas, Bahia, Brazil.

Number of Duty	Work Shifts	
	Day	Night
No duty	4%	13%
1 to 2 shifts	31%	65%
3 to 4 shifts	36%	13%
More than 4 shifts	29%	9%

Source: Data collected Prepared by the authors, 2024.

Of the professionals studied, only six work exclusively in the day shift, while most work in the day and night shifts alternately. It is observed in the hospital surveyed that the number of night shifts is lower than daytime shifts in most professionals, of which 13% reported not doing night shifts and only 9% do above four night shifts during the week. However, these professionals are subject to doubling the shift time stipulated in the service scale (according to reports by the respondents). Some respondents have more than one job or do extra work, which increases the workload (Table 3).

Shift work causes changes in human rhythms reflecting on the sleep-wake rhythm and organic systems, making daytime sleep not have the same characteristics as night sleep, which generates losses in the lives of these professionals ⁽⁹⁾. A study revealed that shift work was the only significant association with poor sleep quality, compared to other variables of age, sex and number of years worked ⁽²²⁾.

Bad sleep declared by 38% of respondents was related to a good performance at work for the most part (65%; n=11), but bad performance for 29% (n=5). Only one respondent reported having bad sleep, but excellent performance at work. The good sleep declared by 42% of respondents was related to a good performance at work for most and excellent for a lower percentage. For the minority (20%) who declared to have excellent sleep, the income at work was considered excellent for the most part, but good for a lower percentage. No one who answered having a good or excellent sleep reported having a bad income at work.

The relationship between sleep and performance seems evident in this nursing team (Table 4). While the results for those who have good and excellent sleep are within expectations, according to what is known about the relationship between sleep and performance at work ⁽¹⁰⁾, it is surprising the report of bad sleep and the high percentage of self-report of good performance at work. The responses may be biased due to a self-protection mechanism, as occurs in unreported moral harassment in hospitals, which may affect the employment relationship or not to expose limitations with the nursing worker's own income ⁽²³⁾.

Table 4: Self-assessment of the relationship between sleep quality and work performance of nurses in a hospital in the city of Alagoinhas, Bahia, Brazil.

Sleep Quality		Performance at Work		
		Bad	Bad	Excelent
Bad	38%	29%	65%	6%
Good	42%	0%	84%	16%
Excelent	20%	0%	22%	78%

Source: Prepared by the authors, 2024.

Forty professionals from the nursing team in the sample (89%) reported never having an accident at work "due to changes in sleep pattern". When analyzing the team's perception of the influence of sleep with the assistance provided, 20 (44%) of the respondents reported that they do not feel influenced, in contrast to 25 (56%) who stated an impairment in patient care when sleep is not of good quality. However, a minority 11% (n=5) reported the connection of sleep problems and accidents at work, which coincided with those respondents who have more than one job, with a weekly work regimen between 61 and 80 hours (Table 4).

There is an apparent paradox between work overload, bad sleep and the preponderant report of lack of work accidents (TA), because sleep deprivation facilitates the occurrence of accidents or the incidence of adverse events. Ribeiro and Shimizu ⁽²⁴⁾ report that there is a connection of excess workload and AT. In turn, Novaretti and collaborators ⁽⁹⁾ report the relationship between excessive workload and the increase in adverse events (AS) in nursing. Conceptually AT and AE are different, although they can be characterized simultaneously in the same occurrence. While TA is characterized as "work accident is what occurs by the exercise of work in the service of the company or by the exercise of the work of the insured referred to ..., causing bodily injury or functional disturbance that causes death or loss or reduction, permanent or temporary, of the ability to work" (as provided for in art. 19 of Law No. 8.213/91) ⁽²⁵⁾, EA is characterized as "unwanted complications arising from the care provided to patients, not attributed to the natural evolution of the underlying disease" ⁽²⁶⁾. Therefore, AT and AE are occurrences that may be coincident, but do not have the same meaning. The consequences of TA are within the scope of labor laws and AE in health management, respectively.

The question about TA may have been interpreted in its categorical form within the scope of labor responsibility, not necessarily related to EAs. The question, therefore, excluded the term "adverse events" that are common in Brazil, particularly in Bahia ⁽²⁷⁾ reaching unacceptable levels by international standards. Therefore, this report of low incidence of TA is interpreted with caution, because the question applied did not distinguish or emphasize AE. As mentioned above, work overload is linked to the occurrence of AE, although it is not the sole cause ⁽⁹⁾. Concomitant with the distinction between TA and AE, the question mentions the connection of TA and bad sleep. We suggest that the question may have been rigid in tying the respondent's understanding that a bad sleep caused some work accident. Therefore, in the present research, it is suggested that the low report of TA and the lack of distinction in the questionnaire on the incidence of AE, may have resulted in biased answers, both by inhibition of the respondent and by the less specific structuring of the question.

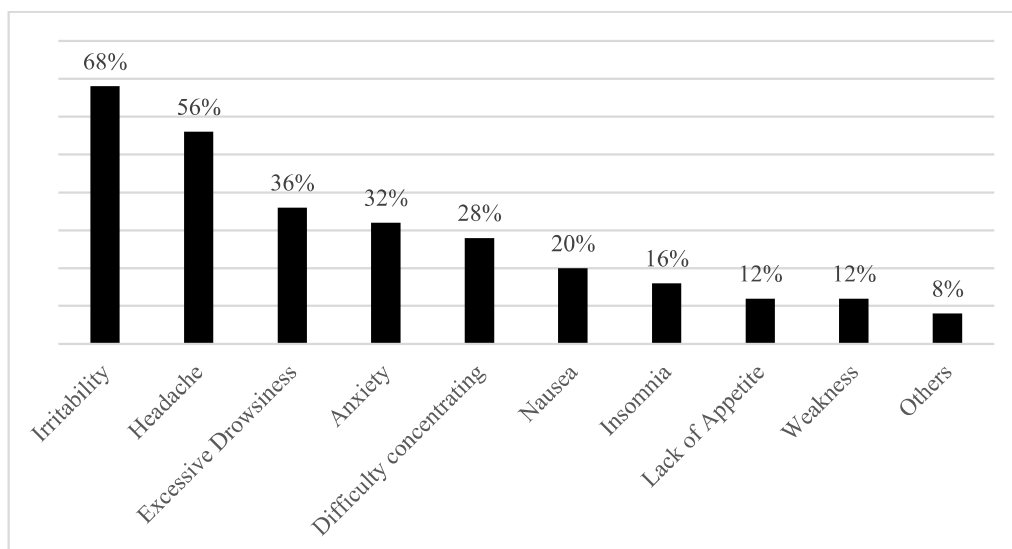
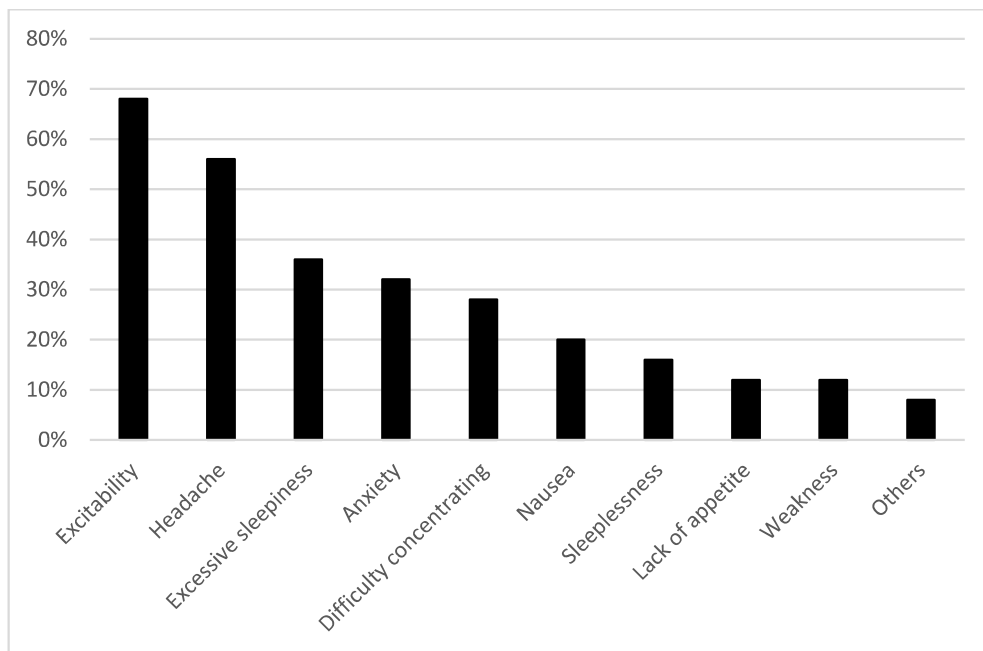
Complaints about health disorders

Performance at work is interdependent on the health of the worker, but this relationship is not always evidenced and there are different poorly defined impacts ^(10, 28, 29). Metabolic, immunological, infectious and psychic disorders are often linked to sleep disorders in nurses ^(10, 29). There are longer-term consequences, which can generate health problems such as cardiovascular diseases, hypertension, dyslipidemia, metabolic syndrome, type 2 diabetes mellitus, weight disorders and cancer ⁽¹⁰⁾.

Other manifestations observed with the low quality of sleep of one night are reflected on the next day, in which a person may present with a bad mood, irritation, slow rhythm, difficulty in learning and low ability to concentrate ⁽¹⁰⁾. Work overload and work routines can produce sleep disorders such as insomnia and daytime sleepiness ⁽³⁰⁾. Given this evidence from the scientific literature, the need arose to analyze whether professionals feel any clinical signs that are related to their sleep pattern.

Most (56%) of professionals reported experiencing changes in health attributed to poor quality of sleep. Irritability and headache were the most frequent complaints (Figure 1). These complaints were followed in descending order, of excessive drowsiness, anxiety, difficulty concentrating, nausea, insomnia, lack of appetite and weakness. Finally, less common, there are other diffuse complaints, such as polydipsia (Figure 1). These signs of poor health have been reported in other studies with nursing professionals ^(18, 28-30). The complaints observed in the present study are signs linked to the most common non-communicable health problems in nursing professionals, such as cardiovascular diseases, anxiety, post-traumatic stress, burnout syndrome and weight disorders ^(5, 28-32). Interestingly, pain was not reported at high frequency, since nursing workers often complain of joint and muscle disorders ⁽³⁰⁾.

Figure 1: Self-assessment of physical and mental health complaints of the female nursing team in a hospital in the city of Alagoinhas, Bahia, Brazil.



Source: Data collected Prepared by the authors, 2024.

Final observations and limitations of the study

In the present study with nursing professionals working in a city in the interior of Bahia, there was a report of sleep disorders and health problems. A substantial part of the professionals work on a workload beyond what is recommended to ensure the safety of both patients and professionals. The team reported health problems that converged as the scientific literature has reported, with metabolic and psychic disorders. However, in the reports, it does not seem that the team mostly links overwork, sleep disorders and performance at work.

In the study it is not possible to attribute health problems to sleep disorders, although it is evident the high workload and the great involvement in shift work. Sleep is not the only factor that can influence the health of nursing professionals. Studies aimed at evaluating the health of nurses indicated work overload, shift work, low pay and authoritarian leaders are linked to psychic

problems^(8, 29). The complaints expressed by the nursing team in this study are some of the signs of Burnout Syndrome^(31, 32), suggesting a threshold for good health, but there is no unequivocal connection of these signs with sleep. Like other studies, in this investigation part of the team reported work overload, alternating shifts, sleep disorders and health complaints. Therefore, it can be interpreted that part of the team in the present study is in a vulnerable situation and at risk of illness linked to work.

The present study had some limitations. The questionnaire prepared by the authors has not been previously tested so that it can be validated, increasing confidence in the answers. In addition, the questionnaire is self-evaluative, where it is not possible to verify the veracity of the reports or the observational or clinical confirmation of a diagnosis of the complaints. Confirmation would require an evaluation with diagnostic instruments and observations of professionals, both at home and in their work environment.

Other limitations are the small sample number, including only women and only one hospital. Therefore, caution should be exercised in generalizations and the study reported here is a social cut of a professional category, with the objective of contributing to the study of sleep disorders in nursing workers. However, this study aligns with many studies that bring relevant contributions on health problems in nursing professionals applying questionnaires⁽⁹⁾ with small samples⁽³¹⁾, from a single institution⁽²⁴⁾ and only in women⁽³²⁾.

CONCLUSION

Taken together, the statements of the respondents suggest that there is a low quality of sleep and greater health risk in the nursing professionals of a hospital in Alagoinhas, Bahia. This situation is aggravated by work overload, which decreases the quality of care and can increase the health risks of nursing professionals. It has long been investigating and discussing shift work, its advantages and disadvantages. In health professionals this discussion takes on greater proportions, since hospitals are potentially contaminated environments and where there is a thin line that separates life from the death of patients and in some circumstances such as pandemics, the nursing professionals themselves. Thus, in convergence with other studies, it is suggested actions that can mitigate sleep changes, such as the decrease in work overload, the hiring of more professionals, fair remuneration and a scale that does not cause disturbances in sleep health.

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