

The quality of sleep of physiotherapists in a public hospital during the Covid-19 pandemic

A qualidade de sono de fisioterapeutas de um hospital público durante a pandemia de Covid-19

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ABSTRACT | INTRODUCTION: The covid-19 pandemic has made it necessary to study the impact of the pandemic and the new work routines imposed on workers on the health status of health professionals, especially hospital-based physical therapists. **OBJECTIVE:** To evaluate the quality of sleep and daytime sleepiness of hospital-based physical therapists during the covid-19 pandemic. **MATERIALS AND METHODS:** This is an observational, cross-sectional, prospective study conducted in a public hospital in northeastern Brazil. The research had as target audience, hospital-based physical therapists working or not in covid sectors during the covid-19 pandemic. We applied the Pittsburgh Sleep Quality Index (PSQI), the Epworth Sleepiness Scale (ESS), and questionnaires with demographic, work, health, and stress perception characteristics. **RESULTS:** Forty-five physical therapists participated in the study, and it was observed that 62.2% were female, 66.7% reported working 60h per week, and 55.6% worked in the covid and non-covid sectors. A high frequency of poor sleep quality (68.9%) was observed regardless of workload or work sector. In addition, there was a higher prevalence of excessive daytime sleepiness (43.3%) among physical therapists who worked 60h per week. **CONCLUSION:** Hospital-based physical therapists in a public institution have poor sleep quality, and those who work more hours have a higher prevalence of excessive daytime sleepiness.

KEYWORDS: Sleep Wake Disorders. Occupational Stress. Sleepiness. Coronavirus.

RESUMO | INTRODUÇÃO: A pandemia de covid-19 tornou necessário estudos sobre o impacto da pandemia e das novas rotinas de trabalho impostas ao trabalhador no estado de saúde de profissionais de saúde, em especial os fisioterapeutas hospitalares. **OBJETIVO:** Avaliar a qualidade de sono e sono-lência diurna de profissionais de fisioterapia hospitalar durante o período de pandemia do covid-19. **MATERIAIS E MÉTODOS:** Pesquisa observacional, transversal, prospectiva em um hospital público do nordeste brasileiro. A pesquisa teve como público-alvo fisioterapeutas hospitalares atuantes ou não em setores covid durante a pandemia de covid-19. Foram aplicados os instrumentos Índice de Qualidade do Sono de Pittsburgh (IQSP), Escala de Sono-lência de Epworth (ESE) e questionários com características demográficas, trabalho, saúde e percepção de estresse. **RESULTADOS:** Participaram do estudo 45 fisioterapeutas e foi observado que 62,2% eram do sexo feminino, 66,7% relataram trabalhar 60h por semana e 55,6% trabalharam em setor covid e não covid. Observou-se elevada frequência de má qualidade do sono (68,9%) independente de carga horária ou setor de trabalho. Houve maior prevalência de sono-lência diurna excessiva (43,3%) entre os fisioterapeutas que trabalhavam 60h por semana. **CONCLUSÃO:** Os fisioterapeutas hospitalares de uma instituição pública têm má qualidade do sono e aqueles que trabalham com maior carga horária apresentam maior prevalência de sono-lência diurna excessiva.

PALAVRAS-CHAVE: Transtornos do Sono-Vigília. Estresse Ocupacional. Sono-lência. Coronavirus.

Introduction

The demands of modern society make people not get enough sleep daily. Focusing on healthcare workers, they perform their professional activities in shifts and rotating night shifts, in addition to the many jobs they have to generate financial income compatible with their personal needs. Such routine causes physical and mental fatigue, sleep disorders, sleep deprivation, and poor quality sleep.^{1,2}

The type of work is one of the factors involved in the quality of sleep, and healthcare workers are one of the groups of professionals who the most compromised quality of sleep.³ A characteristic of the service provided by these professionals is shift work, which is a form of work organization in which several teams take turns so that the service is offered continuously, with extended working hours, because of the need to assist patients 24 hours a day.⁴⁻⁶

Recently, with the onset of the covid-19 pandemic, the maximum of the workforce health professionals has been demanded. The pandemic has put pressure on health services to provide adequate personal protective equipment, training for adequate care, more patients to be treated, and, of course, a greater workload and exposure of health professionals to potential contamination.⁷

In this context, healthcare workers are submitted to longer and irregular workloads, besides being subjected to situations of stress and anxiety.⁸ These situations lead to psychological suffering and have a negative impact on the quality of sleep of these professionals, as shown in a study that investigated the psychological complications of covid-19.⁹ Thus, studies on the impact of the covid-19 pandemic and the new work routines imposed on workers on the health status of health professionals, especially hospital-based physical therapists, become important.

With the covid-19 pandemic, there was a greater need for Intensive Care Unit beds for the admission of severe cases that require oxygen support and mechanical ventilation. From this perspective, physical therapists were frontline professionals in the fight against the disease due to their attributions in managing mechanical ventilators, managing this process, and other therapeutic resources. Thus, the question is about the quality of sleep of hospital-based physical therapy professionals under the stress of the frontline routine in fighting the covid-19 disease. To answer this question, this study aims to evaluate the quality of sleep and daytime sleepiness of hospital-based physical therapy professionals during the covid-19 pandemic.

Materials and Methods

This study was observational, cross-sectional, prospective, collecting quantitative, and was conducted on the premises of a public hospital located in Teresina-PI, Brazil. The population of the study was 52 physical therapists from the Public Hospital. The sample of this study consisted of all professionals who met the inclusion criteria, which was offering direct care to patients admitted to the hospital between April and September 2020. In addition, those who were on vacation or extended leave from work at the time of data collection and/or did not completely fill out the data collection questionnaires were excluded. Thus, the final sample was 45 physical therapists.

Initially, the researchers informed the participants about the research objectives. After they authorized voluntary participation by signing the Free and Informed Consent Form, the researchers sent a data collection instrument in a virtual format, and we are available for any clarifications. The questionnaires were filled out during work breaks or even outside the workplace. The approach to the study participants occurred between August and September 2020.

Information on demographic and social aspects was collected, with data on age, gender, work sector (non-covid and/or covid sectors) and whether they had other employment ties, health habits (the practice of physical activity and consumption of stimulants), and perception of stress. Therefore, the assessment of sleep quality was done using the Pittsburgh Sleep Quality Index (PSQI), validated in Brazil.¹⁰ This instrument is composed of 19 items in self-report and five items directed to the room companion, distributed in seven domains: (1) subjective sleep quality; (2) sleep latency; (3) sleep duration; (4) habitual sleep efficiency; (5) sleep changes; (6) use of sleep medications; and (7) diurnal sleep dysfunction. Each item of the PSQI was measured on a four-point Likert-type scale, with levels ranging from zero (no difficulty) to three (severe difficulty). The overall score of the instrument is obtained from the sum of the scores of the seven domains and ranges from 0 (zero) to 20 points so that higher total scores indicate worse sleep quality. Thus, the result can be classified as good sleep quality (0 to 5), poor quality (> 5).¹⁰

Regarding the assessment of excessive daytime sleepiness, the Epworth Sleepiness Scale (ESS) was used. It was created based on observations related to the nature and occurrence of daytime sleepiness and validated in Brazil.¹¹ The instrument evaluates the probability of falling asleep in eight situations involving daily activities; it is simple, self-applicable, and quick to complete. Each item of the ESS is measured on a four-point Likert-type scale, whose levels are: (0) would never sleep; (1) small chance of dozing; (2) moderate chance of dozing; and (3) high chance of dozing. The overall score is obtained by summing the values of the eight items and can range from zero to 24 points. Higher scores correspond to higher degrees of sleepiness. For classification, scores above 10 points suggest a diagnosis of excessive daytime sleepiness (EDS).¹¹

Data were organized in a Microsoft Excel 8.0 spreadsheet and later exported to the Statistical Package for the Social Sciences (SPSS) version 22.0, and the variables were described by percentage, mean, median, and standard deviation. Categorical data analysis was done by the Chi-square association metrics and presented in percentages (descriptive). To analyze the continuous variables, data normality was checked using the Kolmogorov-Smirnov test to determine later the comparative analysis tests (Mann-Whitney and Kruskal-Wallis). A confidence interval of 95% and a significance level of 5% ($p < 0.05$) were considered.

This research occurred after the approval of the Research Ethics Committee with CAAE: 35647020.8.0000.8050. Therefore, the research was following the norms of resolution 466/12 of the National Health Council - CNS involving research with human beings.

Results

In this study 45, physical therapists were evaluated, and it was observed that 62.2% were female, the mean age of 39.3 ± 5.9 years (minimum = 29; maximum = 57 years), in which 66.7% reported a weekly workload of at least 60 hours, 55.6% worked in covid and non-covid sectors. About the routine activities that can impact sleep, we observed the report that 73.3% did not practice regular physical activity, 44% consumed stimulants at least once a day, 17.8% had taken medication for sleep, depression, or anxiety during the last 30 days. Concerning the perception of stress level in the last 30 days, 48.9% reported it as moderate. Table 1 below shows the profile of the physical therapists working in the hospital during the covid-19 pandemic period.

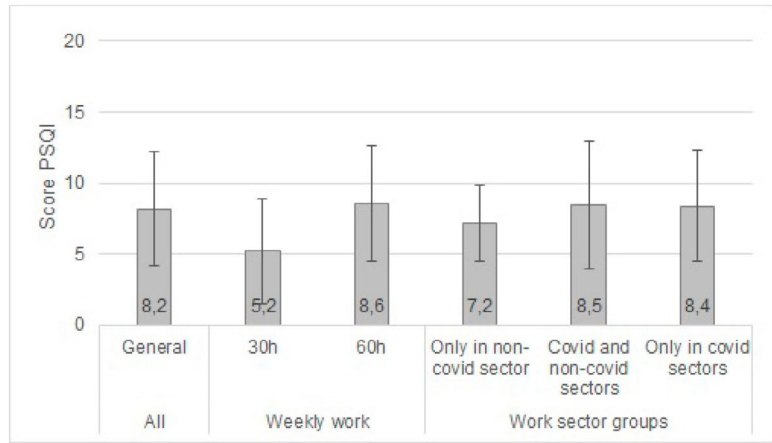
Table 1. The Profile of hospital based physical therapists in the covid-19 pandemic period, Teresina, 2020

Variables	n	%
Sex		
Female	28	62,2
Male	17	37,8
Workload		
At least 30h	15	33,3
At least 60h	30	66,7
Sectors where they work		
Only in non-covid sector	10	22,2
In both covid and non-covid sectors	25	55,6
Only in covid sectors	10	22,2
Practice regular physical activity		
Yes	12	26,7
No	33	73,3
Consumption of stimulants		
Less than 01 time a day	14	31,1
At least 01 time a day	20	44,4
02 times a day or more	11	24,4
Perception of stress level		
None	03	6,7
low	16	35,6
Moderate	22	48,9
High	04	8,9

Source: Researcher's data.

In the analysis of the quality of sleep of physical therapy professionals, we observed a mean PSQI of 8.2 ± 4.0 , compatible with poor sleep quality score, and 68.9% of the prevalence of physical therapists with poor sleep quality. No difference was observed between scores and prevalence when analyzing the gender groups, workload, work sectors, and perception of stress level. Figure 1, below, shows a general description of the PSQI scores in relation to workload group and work sector.

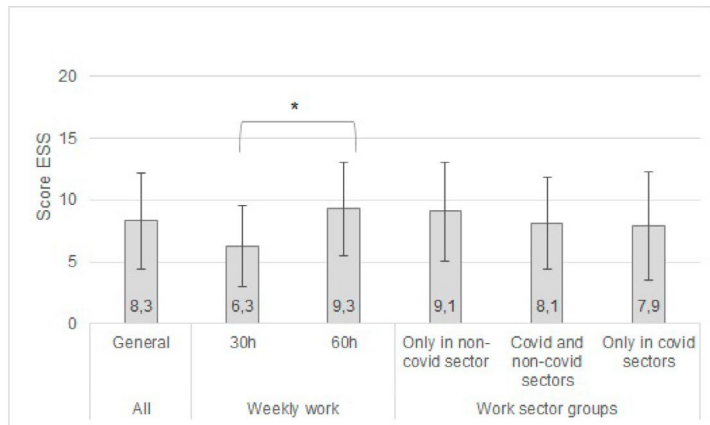
Figure 1. Mean PSQI scores of hospital based physical therapist in overall, in relation to workload and work sectors. Teresina, 2020



Source: Researcher's data.

The evaluation of the ESS findings showed a general mean ESS of 8.3 ± 3.9 (ESS > 10, presence of excessive daytime sleepiness - EDS) and a prevalence of EDS of 31.1%. When analyzing the ESS scores in the workload and work sector groups, it was observed that in the comparison between the groups with 30 and 60 hours of weekly work, there were differences in the scores with higher values for the professionals who worked for a longer time (9.3 ± 3.8 vs 6.3 ± 3.3 ; $p = 0.019$), as shown in Figure 2.

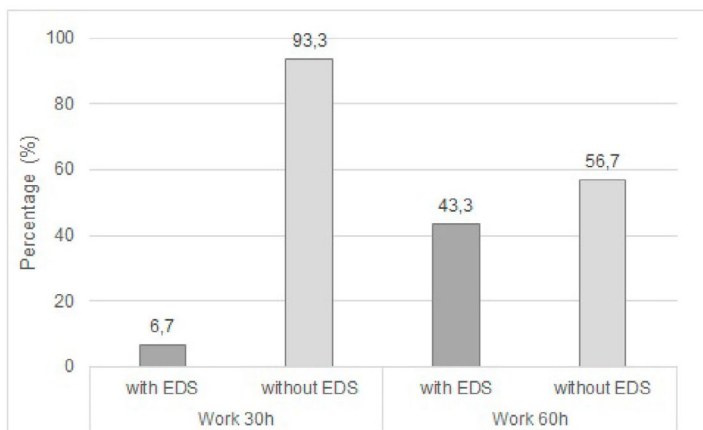
Figure 2. Mean ESS scores of hospital based physical therapist in overall, in relation to workload and work sectors. Teresina, 2020



Source: Researcher's data. Mann Whitney test. * $p < 0.05$.

We also observed a difference in the prevalence of EDS ($\chi^2 = 6.273$, $p = 0.012$) with 6.7% vs 43.3% for the 30h and 60h work groups, respectively. Figure 3 shows the frequencies of EDS for the groups of professionals in relation to workload.

Figure 3. Prevalence of professionals with EDS in relation to workload. Teresina, 2020



Source: Researcher's data.

Still, with regard to the groups of professionals based on the workload, no difference was observed in the prevalence of perceived stress, use of medications, and use of stimulants. In another comparative analysis between genders, there was no difference in the prevalence of poor sleep quality, excessive daytime sleepiness, and the perception of stress level. Concerning the comparison of the work sector groups, a difference was observed only in the perception of stress between the sector groups ($X^2 = 15.612$; $p = 0.016$), with a greater perception of moderate stress for the non-covid sector group (70%), followed by the covid and non-covid sector (52%) and only the covid sector (20%). Moreover, no difference was observed amongst the other variables analyzed (poor sleep quality, presence of EDS, use of sleeping medications, depression/anxiety, and consumption of stimulants).

Discussion

The present study found that physical therapists working in a public hospital during the covid-19 pandemic mostly had a 60-hour workload and provided care in covid and non-covid sectors. As a result, these professionals had a high prevalence of poor sleep quality. Additionally, they demonstrated an important frequency of excessive daytime sleepiness, with a higher prevalence in those who had a workload of 60 hours per week.

Regarding work characteristics, most of them worked about 60h per week and performed their care activities both in covid and non-covid care settings. Previously the literature reported that health professionals in intensive care units are subjected to an excessive and stressful workload since they deal with patients' lives at risk and are required to make complex decisions¹² often. Moreover, they work more than one shift on weekends and holidays, and given this context, the difficulty for health professionals, especially those who work at night, is to be able to adapt their sleep to their rhythm of life and work, contributing to negative health outcomes.¹²

Thus, the hospital routine can be stressful for the multi-professional team, justifying the results that showed a moderate level of stress in the professionals of this study.^{13,14} Added to this, in this pandemic scenario in which professionals are susceptible to

contamination while on duty and with the fear of the possibility of infection of family members, high rates of psychological distress are observed, such as fear, anxiety, depression, anguish, and non-restorative sleep, as demonstrated by recent studies that analyzed the mental health of health professionals working during the covid-19 pandemic.^{14,16,17}

The same study also points out that a probable reason for this illness is the workload and the intensity of the health professionals' work, which has increased due to the high demand of sick cases, making them subject to more than one employment relationship with work overload, not having enough time for adequate rest, and thus being prone to sleep disorders.¹⁴

In this study, physical therapists presented a high prevalence of poor-quality sleep, corroborating a previous study with health professionals.¹⁸ Studies point out that sleep disorders and deprivation in healthcare professionals can cause fatigue, difficulties in concentrating and making decisions quickly, and dealing with death and acute suffering, they end up developing primary insomnia, sleep irregularity, implying that these professionals do not have the essential resting time during the week. That may put the patient's health at risk.¹⁹ In a previous study with 168 nurses in a hospital unit, poor sleep quality and EDS of the professionals regardless of the work shift were observed.¹⁹ Another study, also with 60 nurses, showed poor sleep quality and irregular sleep pattern.²⁰

The results of the present research showed a higher prevalence of EDS in professionals with a greater workload. This finding reveals the relationship between increased workload and sleep disorders, poorer sleep quality, and EDS in these professionals. Furthermore, according to a study carried out with healthcare professionals involved in the direct care of patients with covid-19, there was a considerable proportion of professionals with symptoms of anxiety, depression, anguish, factors that end up interfering in the quality of sleep and consequently in the quality of life of workers.²⁰

Another study with health professionals who worked longer during the week showed that they had a shorter duration of sleep and, for this reason, reported greater EDS. In addition, the professionals also reported greater feelings of fatigue.²¹ The excessive workload with a second job among health

professionals was also related to greater EDS in a study conducted with nurses. During this work period, professionals spend long hours in the work environment, enduring working conditions that consequently worsen their quality of life.⁵ To reconcile the heavy workload, many professionals work the night shift. Health professionals who work at night report more insomnia and fatigue than professionals who work during the day.²² That occurs because there is an alteration in the sleep-wake cycle, shifting sleep to daytime and work to nighttime, which interferes with the internal regulation of sleep.²³

Given the results obtained, it is expected that this study has highlighted the health of physical therapists, an important and prominent professional during the covid-19 pandemic, acting at the front line with respiratory rehabilitation and early mobilization from the ICU to the hospital wards. However, the high exposure of these professionals to contaminated aerosols due to the inherent aspects of their professional practice and the complexity of their actions in the ventilatory care of patients can make this activity stressful. Added to this is their involvement with various employment relationships.

The limitations of this study were that it was carried out only in professionals from one hospital and one professional category; however, this made the sample characteristics more homogeneous and made it possible to know the implications of work on the sleep of physical therapists.

We conclude that physical therapists who work in a hospital environment of a public institution have a high prevalence of poor-quality sleep, and the EDS showed a high frequency in professionals with a longer workload (60h). These findings reveal the importance of addressing the issue and guidance on health measures to improve the quality of sleep of physical therapists. Further studies on the subject with greater coverage of institutions and professionals are necessary, and intervention proposals to improve sleep quality.

Author contributions

Santos JS, Lima CA, Moreira WS, Monteiro PNC, Sales MC, Lima JS, and Vieira CEN participated in project preparation, data collection,

and analysis and discussion of results. Ferreira LGF participated in the orientation, preparation of the project, submission to the ethics committee, data collection, and statistical analysis of the article.

Competing interests

No financial, legal, or political conflicts involving third parties (government, corporations and private foundations, etc.) have been declared for any aspect of the submitted work (including, but not limited to grants and funding, advisory board participation, study design, preparation of the manuscript, statistical analysis, etc.).

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