ORIGINAL ARTICLE

Burnout levels and sleep quality of COVID-19 heroes

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Abstract

Purpose: This study was carried out to determine the burnout levels and sleep quality of nurses in the coronavirus disease-2019 process.

Design and Methods: The population of this descriptive and cross-sectional study consisted of all nurses working in hospitals in Turkey.

Findings: Nurses' mean scores were compared by gender. The emotional burnout and personal achievement scores of male nurses were higher than those of female nurses. Single nurses had significantly higher emotional exhaustion and depersonalization scores than married individuals. Nurses mostly experienced emotional exhaustion, and burnout levels increased in line with insomnia.

Implications for Nursing Practice: Nurses struggling on the frontline during the pandemic were determined to be at risk of insomnia and burnout.

KEYWORDS
burnout, COVID-19, nurse, sleep

1 | INTRODUCTION

Coronavirus disease-2019 (COVID-19) is a member of the same group of viruses that cause severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome. It first appeared in Wuhan, the capital of China's Hubei province, in December 2019 and was later named SARS-CoV.[1,2]

The declaration published by the World Health Organization on March 21, 2020, reported that there had been more than 283,000 cases and that more than 11,561 people had died from this disease.[3,4] COVID-19 spreads very quickly and is transmitted from person to person through droplets, respiratory secretions, and direct contact.[5–7]

Clinical symptoms of COVID-19 include fever, cough, muscle pain, fatigue, headache, diarrhea, and hemoptysis. The clinical course can range from severe respiratory failure to death.[8] The elderly and individuals with chronic diseases are reported to be particularly susceptible to infection,[9] while most other adults or children experience mild flu-like symptoms.[1]

Health institutions are among the institutions that work under the most difficult conditions in epidemics that affect the entire world and result in high levels of mortality. The mental health of healthcare teams with heavy social and work responsibilities is particularly affected in pandemics that affect society both socioeconomically and psychologically. In the first study involving healthcare workers in the city of Wuhan, where the COVID-19 epidemic first emerged, 71.3% of healthcare teams were found to have subthreshold and mild mental disorders, 22.4% moderate disorders, and 6.2% serious mental disorders immediately after the outbreak.[10] In addition, a study of 1,257 health workers in China reported depression in 50%, anxiety in 45%, and insomnia in 34%, while 72% experienced stress.[11] Nurses, who constitute the majority of healthcare professionals, frequently experience anxiety, anger, insomnia, headache, and finally burnout while providing care for individuals with COVID-19.[12]

Health workers on the frontline during the pandemic are exposed to high, chronic stress due to the high risk of infection, and long working hours. These stress factors impact adversely on sleep and mental health.[13,14] Impaired sleep experienced by nurses is known to lead to psychological problems in advanced stages.[15,16] Insomnia experienced in this context[15,17] reduces the quality of life and leads to burnout.[18,19] The main reported causes of burnout experienced in the context of the COVID-19 pandemic are care to severely ill patients with a high risk of mortality, uncertainty, complex patient care, intense workloads, insufficient hospital resources,

lack of staff, and sleep disturbance.[20–22] Large-sample cross-sectional studies have indicated a strong relationship between sleep quality and burnout.[20,22] Some studies have also suggested that nurses may experience insomnia as a result of burnout.[23]

Research Questions

1. What are the burnout levels of COVID-19 heroes in the first wave of the pandemic?
2. What is the sleep quality of COVID-19 heroes in the first wave?
3. Is there a significant relationship between burnout levels and sleep quality of COVID-19 heroes in the first wave?

2 | METHODS

2.1 | Type of the study

This descriptive and cross-sectional study was performed to determine the burnout levels and sleep quality of nurses during the COVID-19 pandemic.

2.2 | Universe and sampling

The study data were collected between May 10 and 20, 2020, during the first wave of the pandemic. The first case of COVID-19 in Turkey was reported by the Ministry of Health on March 10, 2020, The research population consisted of all nurses engaged in the fight against COVID-19 in hospitals in Turkey. A study sample of 384 nurses was determined with a 95% sample confidence interval and margin of error of 0.05. Nurses were selected based on simple random sampling. All nurses agreeing to participate were included (n:384). Complete responses were finally obtained from 267 nurses, yielding a response rate of 69.5%.

2.3 | Data collection tools and data collection

The study data were collected using a questionnaire developed by the researchers, the Pittsburgh Sleep Quality Index (PSQI), and the Maslach Burnout Inventory (MBI). After receiving the necessary permissions for the study, an online questionnaire was created using the Google Forms web application. This was sent to the participants' smartphones through the WhatsApp messenger program. The participants in this study consisted entirely of nurses working in hospitals designated for the treatment of COVID-19 infected patients in Turkey. All nurses were working on their usual wards during the COVID-19 pandemic.

2.3.1 | The questionnaire form

This consists of 15 questions in two parts. The first part contained questions about the nurses' socio-demographic characteristics (gender, age, geographical region, etc.), and the second part concerned nurses' experiences during the COVID-19 pandemic.

2.3.2 | The Pittsburgh Sleep Quality Index

Developed by Buysse et al.,[24] PSQI is a self-report survey evaluating sleep quality and discomfort in the preceding 1 month. The PSQI consists of a total of 24 questions, 19 of which are based on self-reports and five of which are evaluated by the individual's spouse or partner. PSQI global scores higher than 5 indicate significantly poor sleep quality.[24]

2.3.3 | The Maslach Burnout Inventory

The MBI, developed by Maslach and Jackson,[25] consists of 22 items in three different subdimensions: emotional exhaustion (EE; nine items); depersonalization (D; five items); and personal accomplishment (PA; eight items). The items investigating personal achievement in the survey are all positive, in contrast to the other subdimensions. High scores obtained from these items indicate high personal achievement and a low burnout level. In contrast, high scores from the emotional burnout and depersonalization subdimensions and low scores from the personal achievement subdimension indicate high levels of burnout. Burnout levels are not evaluated based on a single score, but based on three separate scores from the different subdimensions.[25]

2.4 | Data evaluation

The data were analyzed on SPSS (Statistical Package for Social Sciences) 22.0 software. Descriptive statistical methods such as frequency, percentage, mean, SD, and the Kolmogorov–Smirnov distribution test for normal distribution were employed during the data analysis. The t test and one-way analysis of variance were used to comparing variables exhibiting normal intergroup distribution, and Pearson correlation analysis was applied to determine relationships between numerical variables.

2.5 | Ethical considerations

Permission for the study (no. 05/2020) was obtained from the university scientific research and publication ethics committee. Approval (no. 2020-05-06T23-53-30) was also received from the Turkish Ministry of Health. All nurses gave their informed consent in line with the principle of voluntary participation. $p < 0.05$ was considered statistically significant.

3 | RESULTS

The mean age of the nurses in this study was 28.03 ± 5.99 y (min: 21; max: 51), 75.3% were female, 63.3% were single, and 72.7% held an undergraduate degree. In addition, 72.3% of nurses had no family or close friends diagnosed with COVID-19, 86.1% had not taken a COVID-19 test, 79% had received training about COVID-19 in their institution, and 46.8% had provided care for a patient diagnosed with COVID-19.

A comparison of mean scores by gender revealed significantly higher emotional exhaustion ($p = 0.040$) and personal achievement ($p = 0.019$) scores among male nurses than female nurses, but no significant relationship was determined between PSQI and depersonalization scores. Female nurses experienced less emotional exhaustion, but a greater lack of personal achievement. Emotional exhaustion and depersonalization scores were significantly high among single nurses, but there was no significant association between their PSQI and personal achievement scores. Nurses who had cared for patients diagnosed with COVID-19 in their institutions registered significantly higher emotional exhaustion and personal achievement scores, but no significant difference was observed between PSQI and depersonalization scores (Table 1).

Table 2 shows how nurse burnout and sleep patterns were affected during the COVID-19 pandemic. The nurses participating in the study were found to experience moderate emotional exhaustion and a high level of depersonalization and personal achievement. This shows that nurses experienced moderate burnout in terms of the emotional exhaustion subdimension, and low burnout in terms of the depersonalization and personal achievement subdimensions (Table 2).

Examination of the relationship between the variables revealed a significant relationship between sleep and burnout scores. A statistically significant positive relationship was also observed between PSQI and emotional exhaustion ($r = −0.234$, $p < 0.001$) and depersonalization ($r = −0.174$, $p = 0.004$) scores, but there was no significant difference between PSQI and personal achievement ($p > 0.05$; Table 3).

According to the multiple linear regression analysis, the factors that significantly affected nurses' emotional exhaustion scores of nurses were age, sleep quality, the unit they worked in, educational status, and having someone diagnosed with COVID-19 in the immediate environment. These variables explained 20% of the total variance (Table 4).

4 | DISCUSSION

COVID-19, which has a high risk of transmission and has now spread worldwide, places a particularly heavy burden on healthcare workers. A study evaluating the burnout levels of both physicians and nurses in Wuhan, China, reported that the difference between the genders has no effect in terms of emotional burnout.[26] Another study from China evaluating the mental health of health workers found that women and nurses had higher burnout levels.[11] Albott et al.[27] reported that during the pandemic period, the resilience level of healthcare professionals decreased in cases such as intense workload and cancellation of leave, and that this situation particularly led to burnout in female health workers. In contrast, Cañadas-De la Fuente et al.[28] reported higher burnout levels among male nurses. In the current study, the nurses' mean scores of nurses by gender, and the emotional exhaustion ($p = 0.040$), and personal achievement ($p = 0.019$) scores of male nurses were significantly higher than those of female nurses. The difference between the results of this study and the previous literature may derive from variations in working conditions.

TABLE 1 Distributions of PSQI and MBI scores according to various descriptive nurse characteristics (n = 267)

Characteristics	N (%)	PSQI Mean ± SD	Maslach Burnout Inventory		
			Emotional burnout Mean ± SD	Depersonalization Mean ± SD	Personal achievement mean ± SD
Gender					
Female	201	10.03 ± 3.16	23.11 ± 7.86	16.95 ± 4.63	17.22 ± 3.79
Male	66	10.19 ± 2.82	25.42 ± 8.04	17.75 ± 4.30	18.59 ± 4.87
		$p = 0.711$	$p = 0.040^*$	$p = 0.213$	$p = 0.019^*$
Marital status					
Marital status	98	10.21 ± 3.16	21.56 ± 7.60	16.29 ± 4.69	17.16 ± 3.63
Single	169	9.99 ± 3.03	24.91 ± 7.91	17.64 ± 4.41	17.79 ± 4.36
		$p = 0.574$	$p = 0.001^*$	$p = 0.020^*$	$p = 0.229$
Providing care for a patient diagnosed with COVID-19					
Yes	125	10.04 ± 2.87	25.64 ± 8.32	17.96 ± 4.75	18.06 ± 4.27
No	68	10.50 ± 3.18	21.14 ± 6.54	16.63 ± 4.48	16.63 ± 4.04
		$p = 0.308$	$p < 0.001^*$	$p = 0.059$	$p = 0.025^*$

Abbreviations: ANOVA, analysis of variance; COVID-19, coronavirus disease-2019; MBI, Maslach Burnout Inventory; PSQI, Pittsburgh Sleep Quality Index.

*t test.

TABLE 2 Nurses' Pittsburgh Sleep Quality Index (PSQI) and Maslach Burnout Inventory subdimension mean scores (n = 267)

Inventory	Mean ± SD	Median (min.–max.)	Low n (min.–max.)	Moderate n (min.–max.)	High n (min.–max.)
PSQI	10.07 ± 3.08	10.00 (2–17)			
Emotional Burnout	23.68 ± 7.90	22.00 (9–41)	57 (0–16)	114 (17–26)	90 (27 and over)
Personalization	17.14 ± 4.56	17.00 (5–25)	3 (0–6)	40 (7–12)	224 (13 and over)
Personal Achievement	17.56 ± 4.11	17.00 (8–34)		2 (32–38)	265 (0–31)

TABLE 3 Relationships between nurses' Pittsburgh Sleep Quality Index (PSQI) and Maslach Burnout Inventory subdimension scores (n = 267)

Inventory	Maslach Burnout Inventory		
	Emotional Burnout	Personalization	Personal Achievement
PSQI	r = 0.234	r = 0.174	r = −0.084
	p < 0.001	p = 0.004	p = 0.173

Note: r, correlation coefficient.

TABLE 4 Results for multiple regression analysis between nurses' emotional exhaustion scores and independent variables

Modal	B	SE	β	t	p
Constant	38.787	4.928		7.87	<0.001
Age	−0.347	0.121	−0.269	−2.855	0.005
Possession of children	3.262	1.665	0.188	1.959	0.052
PSQI	0.493	0.175	0.184	2.807	0.006
The unit nurses worked in	−4.113	1.081	−0.0246	−3.804	<0.001
Education	3.576	1.785	0.133	2.004	0.047
Having a relative or friend diagnosed with COVID-19	−0.806	0.225	−0.238	−3.587	<0.001

Note: Model $R = 0.482$; $R^2 = 0.232$; adjusted $R^2 = 0.207$; $F = 9.363$; Dependent variable: Emotional burnout: Independent variables: The unit nurses worked in (0 Unit caring for COVID-19 patients, 1 Unit not caring for COVID-19 patients. Education (0 primary and middle school, 1 high school and above. Possession of a friend or relative diagnosed with COVID-19 (0 Yes 1 No).
Abbreviations: COVID, coronavirus disease-2019; PSQI, Pittsburgh Sleep Quality Index.

Marital status is associated with burnout in terms of perceived social and psychological support.[29] Cañadas-De la Fuente et al.[28] and Guo et al.[9] both reported significantly high emotional exhaustion and depersonalization scores among unmarried nurses. Xie et al.[30] reported that nurses experienced a high level of emotional burnout and depersonalization. However, only youth was identified as an effective factor, and no significant relationship was determined between marital status and burnout levels. Nantsupawat et al.[31] determined no significant relationship between marital status and emotional exhaustion and depersonalization. Kim and Choi[32] also reported greater burnout, particularly emotional burnout, among nurses with inadequate support. Another study determined a decrease in nurse numbers and quality of care due to COVID-19.[33] Hoffman[34] reported that COVID-19 was evaluated as a crisis, resulting in a lack of nurses, and thus with a negative impact on care. In their cross-sectional study, Kang et al.[10] reported impairment of mental health among health professionals during the COVID-19 pandemic sufficiently severe for them to require help. In the present study, single/unmarried nurses registered significantly high emotional exhaustion and depersonalization scores. It may therefore be speculated that marital status is beneficial in terms of social support and psychological support.

Nursing is a profession in which intense burnout is experienced due to such factors as intense workload, difficulty in providing care in critical situations, and fatigue. Relevant studies have highlighted that nurses in particular experience burnout, and that this is particularly affected by working conditions and factors such as insomnia and fatigue.[35,36] During the pandemic, difficult working conditions and intense workloads during the pandemic have also been implicated in emotional and mental burnout among nurses.[11,37] Wu et al.[26] also emphasized that emotional exhaustion had increased due to growing workloads and changing conditions resulting from the pandemic. In the present study, nurses were particularly exposed to emotional exhaustion. Consistent with the previous literature, we attribute this finding to the global challenge being faced by the nursing profession, a difficulty being intensified during the pandemic, and causing emotional burnout in nurses.

Insomnia has been described as one of the main factors of mental health deterioration among frontline nurses during the COVID-10 pandemic.[11] Shaw[38] stated that optimism plays a significant role in the psychological resilience of nurses and emphasized the importance of adequate sleep in ensuring that resilience and preventing burnout. Yuan et al.[39] evaluated the quality of sleep in the pandemic using the PSQI scale and reported low sleep quality and therefore impairment of psychological health. In the present study, burnout increased in line with insomnia. Adequate sleep can be suggested as a highly important parameter for mental health.

4.1 | Limitations of the study

The principal limitation of this study is that it involved only nurses among health professionals.

5 | CONCLUSION

Nurses actively engaged on the frontline during the first wave of the pandemic were at risk of insomnia and burnout. It is of great importance to identify burnout and insomnia in the pandemic and that the requisite precautionary measures be taken.

5.1 | Implications for psychiatric nursing practice

We recommend that nurses' working conditions be improved, that their working hours be scheduled in such a way as to allow adequate sleep, and that measures be taken to improve their mental health. In future studies on the subject, A program for the prevention of insomnia and burnout in all healthcare professionals might be prepared and its effectiveness evaluated in future studies.

CONFLICT OF INTERESTS
The authors declare that there are no conflict of interests.

AUTHOR CONTRIBUTIONS
Design: Aylin Aydin Sayilan and Nurşen Kulakaç. *Data collection and/or data processing, source search, and writing of the article*: Aylin Aydin Sayilan, Nurşen Kulakaç, and Sevda Uzun. *Analysis and/or interpretation*: Nurşen Kulakaç.

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