JOURNAL OF INTERNATIONAL CRISIS AND RISK COMMUNICATION RESEARCH
ISSN: 2576-0017
2024, VOL 7, NO S11

An Investigative Study of Sleep Habits, Burnout, and Perceived Stress in a Group of Healthcare Professionals

Saeed Nahs[1]
Abdullah Laghbi[2]
HUDA MOHAMMED ALI ALSHAMMARI[3]
Ali Mohammed Abdullah Al Zahrani[4]
MOHAMMAD S ALSAEED[5]
Basel mustafaalkishi[6]
Layla Ali alasmari[7]
Fatimh Mohammed Alshehri[8]
Kholoudmordialharbi[9]
Mohammed Ali Eid Al-Raqqas[10]

1. CT specialist, AFHSR
2. CT specialist, AFHSR
3. General Nursing Technician, Al-Khattah Health Center - Hail Region
4. Dental,Ministry of Health
5. PT, OMTC, King Saud hospital
6. Medical intern (in psychiatric hospital)Psychiatry hospital in Alhasah
7. Specialist nurse , King Saud medical city
8. Nursing, King Saud Medical City
9. Nurse, King saud medical city
10. Pharmacy Technician, Dhulay' Rashid Health Center - Al-Rass General Hospital

Abstract
Background: Healthcare Professionals , particularly Healthcare Professionals , face unique stressors that may contribute to sleep deprivation, burnout, and stress, impacting their well-being and job performance. Existing research has highlighted sleep disturbances, increased stress, and burnout, with disparities observed based on gender and training levels. This study aims to explore the relationship between sleep patterns, perceived stress, and burnout among Healthcare Professionals , with a focus on gender differences and the influence of training levels.
Methods: A cohort of 32 active-duty Healthcare Professionals participated in this descriptive study. Sleep patterns were monitored using actigraphy for 5 consecutive days. Participants also completed the Epworth Sleepiness Scale (ESS), Perceived Stress Scale (PSS), and a two-item version of the Maslach Burnout Inventory (MBI). Data were analyzed using SPSS 25.
Results: The average sleep duration for participants was 6.69 hours per night. Daytime sleepiness was minimal, with a mean ESS score of 6.81. Perceived stress levels were low overall (mean PSS score = 10.6), with female Healthcare Professionals reporting higher stress levels than their male counterparts. Burnout levels were generally low (mean MBI score = 3.66), but female Healthcare Professionals exhibited higher burnout compared to males, especially among residents. The sleep, stress, and burnout levels did not show significant variation across different training levels.
Conclusion: Healthcare Professionals in this study reported near-ideal sleep patterns and low levels of stress and burnout. Gender differences were observed, with female Healthcare Professionals reporting higher stress and burnout levels. While the results suggest that Healthcare Professionals are relatively well-rested, further research with larger, more diverse samples is needed to better understand the factors affecting physician well-being.

Introduction

The existing literature on physician well-being paints a concerning picture, highlighting the numerous challenges faced by medical professionals, including diminished sleep, heightened stress, burnout, and increased medical errors (Raj, 2016; Dewey, Sico, and Moeller, 2019; Dimou, Eckelbarger, and Riall, 2016). These challenges arise from the demanding nature of their work, combined with personal and familial obligations. However, the impact of these stressors may vary across different groups of Healthcare Professionals . Previous research has shown disparities in sleep deprivation, stress, and burnout, with women and those in earlier stages of training (such as interns and residents) experiencing greater difficulties compared to their male and senior counterparts (Raj, 2016; Dewey, Sico,

and Moeller, 2019; Dimou, Eckelbarger, and Riall, 2016). This study aims to explore the relationship between sleep patterns, perceived stress, and burnout among Healthcare Professionals , with a focus on gender differences and the influence of training level.

Adequate sleep is essential for maintaining proper brain and body function (Veasey et al., 2002), yet a 2018 poll by the National Sleep Foundation found that only a small percentage of Americans prioritize sleep as part of a healthy lifestyle (Owens, 2001). Sleep deprivation is defined as getting less than five hours of sleep a night, which can lead to cognitive impairments, mood disturbances, and increased fatigue (Veasey et al., 2002; Owens, 2001). Professionals in high-pressure fields, such as healthcare workers, are particularly vulnerable to sleep deprivation (Weinger and Ancoli-Israel, 2002; Alhola and Polo-Kantola, 2007). Studies have shown that on-call duties, for example, can lead to reduced sleep and negatively affect emotional balance (Rose and Ware, 2008), while sleep deprivation among surgical residents has been linked to a significant decline in mental performance and increased fatigue (Weinger and Ancoli-Israel, 2002). Moreover, sleep deprivation is associated with an increased risk of medical errors (Baldwin and Daugherty, 2004). Despite these challenges, the military has recognized the importance of sleep through the implementation of the performance triad (P3), which includes sleep, nutrition, and physical activity as key components of a healthy lifestyle (Ebrahimi and Kargar, 2018). However, a survey revealed that only a quarter of Healthcare Professionals adhered to recommended sleep practices (Ebrahimi and Kargar, 2018). This study aims to delve into sleep patterns among Healthcare Professionals across various medical specialties.

Stress, defined as a psychological response to external or internal stimuli, significantly impacts both mental and physical health. In the medical field, stress is a prevalent issue, with Healthcare Professionals frequently experiencing stress due to factors such as role ambiguity, excessive workloads, and misalignment between job responsibilities and personal capabilities (Hsu et al., 2018; Whitley et al., 1989; Van Wietmarschen et al., 2018). Research has shown that sleep quality and patient load are major contributors to stress, and stress levels can also differ based on gender, with female Healthcare Professionals often facing additional stress due to work-life conflicts (Dewey and Moeller, 2019; Van Wietmarschen et al., 2018). This study aims to examine the prevalence of stress among Healthcare Professionals , with a focus on gender and level of training.

Stress is a primary contributor to burnout, a condition characterized by emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment (Ishak et al., 2009). Burnout is more common in healthcare than in the general population (Raj, 2016), and it has been found to affect Healthcare Professionals at all stages of their careers (Mannam, 2019). According to a 2019 report, 44% of Healthcare Professionals in the United States reported experiencing burnout, with female Healthcare Professionals being more likely to suffer from burnout compared to their male colleagues (Summers et al., 2019). Certain specialties, such as internal medicine, family medicine, and surgery, are particularly affected by burnout (Kane, 2019). Female surgeons also report higher levels of burnout and depression compared to their male counterparts (Durning et al., 2014). Burnout is a significant issue in military medicine as well, with recent studies indicating that a substantial percentage of Healthcare Professionals experience burnout (Dyrbye et al., 2018). This research is part of a broader study on clinical reasoning and aims to describe the patterns of sleep, stress, and burnout among Healthcare Professionals in specialties that are particularly prone to these issues, such as internal medicine, family medicine, and surgery (Dyrbye et al., 2018). The study also investigates whether these patterns differ based on gender and training level, given the evidence suggesting that female Healthcare Professionals are more susceptible to stress and burnout (West, Dyrbye, Sloan, and Shanafelt, 2009). Additionally, the study looks at differences in these factors across various stages of training, including interns, residents, and attending Healthcare Professionals .

Methods

This descriptive investigation involved a cohort of Healthcare Professionals from primary care and surgery who volunteered to participate in the study. Data related to sleep patterns were gathered using an actigraphy device (Philips Respironics - Actigraphy Spectrum Plus), which the participants wore for at least 5 consecutive days (if participants wore it for more than 5 days, only the data from the last 5 days were included). At the conclusion of the monitoring period, participants completed several questionnaires, including the Epworth Sleepiness Scale, Perceived Stress Scale, and a two-item version of the Maslach Burnout Inventory. The data were processed and analyzed with SPSS 25, and the research received approval from the relevant institutional review boards.

Measurements

Actigraphy: Participants wore an activity-sleep monitor (Philips Respironics - Actigraphy Spectrum Plus) for a minimum of 5 consecutive days, tracking their sleep 24 hours a day (excluding time spent showering, bathing, or swimming). The collected data were analyzed using Actiware Software (Philips Respironics), providing insights into the hours of sleep per day, as well as the maximum, minimum, and average sleep times. The study assessed

participants' sleep patterns without any intervention in their routine. Following Veasey et al., 2002, sleep deprivation was defined as having an average of fewer than 5 hours of sleep per night.

Epworth Sleepiness Scale: The Epworth Sleepiness Scale (ESS), a commonly used self-report tool for assessing daytime sleepiness (Johns, 1991), was utilized. Participants rated their likelihood of dozing off in eight different situations using a scale from 0 (never dozing) to 3 (high chance of dozing). The total score ranges from 0 to 24, with a score of 10 or above indicating excessive daytime sleepiness (Johns, 1991).

Perceived Stress and Burnout Measures: Participants completed a 10-item Perceived Stress Scale (PSS), using a five-point response scale from 0 (never) to 4 (very often) (Cohen, Kamarck, and Mermelstein, 1983; West, Dyrbye, Sloan, and Shanafelt, 2009). This scale measures how often participants perceive situations in their lives as stressful. Scores range from 0 to 40, with scores of 13 or lower indicating low stress, 14 to 26 indicating moderate stress, and 27 or higher indicating high stress (Cohen, Kamarck, and Mermelstein, 1983).

Additionally, participants completed a two-item burnout measure adapted from the Maslach Burnout Inventory (MBI), which has been validated in assessing physician burnout (West, Dyrbye, Sloan, and Shanafelt, 2009; Rus&Sandu, 2013). One item assesses emotional exhaustion ("I feel burned out from my work"), and the other assesses depersonalization ("I have become more callous towards people since I took this job"). The scale uses a seven-point Likert-type format, ranging from 0 (never) to 6 (every day). Based on previous studies, a total score of 12 or higher indicates high burnout, a score between 6 and 11 indicates moderate burnout, and a score of 5 or lower indicates low burnout.

Results/Analysis

A total of 32 practicing Healthcare Professionals participated in the study, with 22 males and 10 females (refer to Table 1). The sample consisted of 16 attending Healthcare Professionals , 7 residents, and 9 interns; 26 were from primary care, and 6 were from surgery (see Table 1).

The data from the actigraphy device showed that the average nightly sleep duration for the group was 6.69 hours (SD = 0.66). Additionally, the minimum average sleep duration was 5.7 hours (SD = 0.97), while the maximum average was 7.9 hours (SD = 1.16) over the 5-day monitoring period (see Table 2). These results suggest that sleep deprivation was not prevalent. Both male and female Healthcare Professionals generally received more than 6 hours of sleep, with females sleeping slightly more than males (see Table 2). Moreover, Healthcare Professionals at all training levels appeared to get sufficient sleep, with interns sleeping the most on average, followed by residents, and then attendings. Only 15.6% (n = 5) of participants had an average sleep duration of less than 6 hours: two attendings, two residents, and one intern, all of whom were male.

According to self-reports on the Epworth Sleepiness Scale (ESS), Healthcare Professionals reported minimal daytime sleepiness on average (M = 6.81, SD = 3.89). Among males, 23% reported daytime sleepiness, while only 10% of females did .Although the standard deviations were wide, residents reported slightly higher levels of daytime sleepiness compared to interns and attendings (average ESS score of 8.7 for residents, compared to 6.6 for interns and 6.1 for attendings; see Table 2).

The Perceived Stress Scale (PSS) results indicated that most Healthcare Professionals experienced low levels of stress, with a mean score of 10.6 (SD = 6.3). Gender differences were apparent, with 32% of males reporting moderate to high stress, compared to 60% of females . There was little variation in stress levels based on training, with 33.3% of interns, 33% of residents, and 44% of attendings reporting moderate to high stress (see Table 3).

Lastly, burnout levels were low overall, with a mean score of 3.66 (SD = 2.91) on the Maslach Burnout Inventory (MBI). However, as with stress, burnout was higher among females, with 40% reporting moderate to high burnout, compared to 27% of males (see Table 3). Notably, only 11% (n = 1) of interns reported moderate to high burnout, while 57% of residents and 31% of attendings did

Table 1. Demographic information.

	Intern	**Resident**	**Attending**
Gender			
Male	4	5	13
Female	5	2	3
Specialty			
Primary care	6	6	14
Surgery	3	1	2

Table 2. Comparison of study variable means across gender and level of training.

	Minimum sleep ***M* (*SD*)**	**Maximum sleep** ***M* (*SD*)**	**Average sleep** ***M* (*SD*)**	**Perceived sleepiness** ***M* (*SD*)**	**Perceived Stress** ***M* (*SD*)**	**Burnout** ***M* (*SD*)**
Gender						
Male	5.5 (.85)	7.5 (1.03)	6.5 (.60)	7.2 (4.39)	9.6 (6.6)	3.36 (3.06)
Female	6.1 (1.14)	8.6 (1.17)	7.1 (.61)	5.9 (2.42)	12.5 (5.31)	4.3 (2.58)
Level of Training						
Intern	6.7 (4.27)	8.5 (1.3)	6.9 (.66)	6.6 (4.27)	8.7 (6.43)	2.4 (1.74)
Resident	5.8 (1.28)	7.6 (.82)	6.7 (.85)	8.7 (5.18)	12 (2.76)	5.4 (2.44)
Attending	5.5 (.79)	7.6 (1.09)	6.5 (.57)	6.1 (2.93)	10.9 (7.33)	3.6 (3.34)

Discussion

This research focused on three key aspects of well-being—sleep, stress, and burnout—and their variations based on gender and training level among a group of 32 Healthcare Professionals . The overall findings suggest that the Healthcare Professionals in this study generally achieved sufficient sleep, and experienced low levels of stress and burnout, with only minor, non-significant differences observed between genders and across training stages. These results are promising and may be attributed to several factors. Notably, the participants were based in a structured academic military medical environment that adheres to duty hour regulations and emphasizes a "mission-driven" approach. Research has suggested that Healthcare Professionals often report greater job satisfaction and a stronger sense of purpose compared to their civilian counterparts (Rus&Sandu, 2013). Additionally, these Healthcare Professionals are salaried and not required to meet daily patient quotas, unlike in some civilian settings, which could help reduce overall stress and burnout.

Another potential contributing factor is that participants were allowed to choose their study times, which often coincided with periods of lighter workload (e.g., during a less demanding rotation). These lighter rotations may have facilitated better sleep and contributed to lower levels of stress and burnout than what might be expected in a typical work cycle. Although this cohort was unique in its composition, the findings highlight the potential benefits of conducive work conditions. These results are consistent with the National Sleep Foundation's guidelines and represent an improvement compared to previous studies of U.S. Army Healthcare Professionals (Kassam et al., 2015; McCormick et al., 2012).

However, despite the overall positive findings, there were subgroups within this cohort that experienced lower sleep levels and higher stress and burnout. Female Healthcare Professionals , for instance, tended to sleep more than their male counterparts, contrary to other studies (Rus&Sandu, 2013), but also reported higher levels of stress and burnout. This aligns with findings from other research (Dewey, Sico, & Moeller, 2019; Ebrahimi & Karger, 2018; Summers et al., 2019; Dyrbye et al., 2018). Regarding training levels, interns and residents were found to get more sleep than attending Healthcare Professionals , which might be due to time off from clinical duties during their participation in the study or the absence of duty hour restrictions for attending Healthcare Professionals . Future studies should further investigate these trends. Interns and attending Healthcare Professionals reported higher stress levels, while residents reported more burnout. This discrepancy could be due to residents working near the limits of duty hour regulations, but this remains speculative and warrants further examination in larger studies.

The study has several limitations. It was conducted at a single institution with a small sample size, and participants were likely on lighter, less demanding rotations, which may not reflect typical experiences for Healthcare Professionals at all levels of training. Nevertheless, a strength of the study was its design, which involved continuous actigraphy measurements over five days across various specialties and training levels.

Conclusion

The role of Healthcare Professionals is crucial, and this study examined multiple dimensions of well-being among a group of 32 Healthcare Professionals . Compared to previous national studies, the findings indicate that this cohort experienced near-ideal sleep patterns, along with low stress and burnout levels. However, there were small but not statistically significant variations in these measures across gender and training stages. While it is reassuring that these Healthcare Professionals appeared well-rested, relatively unstressed, and not burned out, further research involving larger, more diverse populations of healthcare providers is needed to deepen our understanding of these aspects of well-being.

References

1. Alhola P. and Polo-Kantola P.(2007) Sleep deprivation: Impact on cognitive performance. Neuropsychiatric Disease and Treatment. https://psycnet.apa.org/record/2008-02717-005(Accessed: 03/03/2020).
2. Baldwin D. C. Jr and Daugherty S. R.(2004) Sleep deprivation and fatigue in residency training: results of a national survey of first-and second-year residents. Sleep. 27(2), pp.217–223. 10.1093/sleep/27.2.217
3. Cohen S. Kamarck T. and Mermelstein R., (1983) A global measure of perceived stress. Journal of Health and Social Behavior.pp.385–396. https://doi.org/10.2307/2136404
4. Czeisler C.(2015) Duration, timing and quality of sleep are each vital for health, performance and safety. Sleep Health: Journal of the National Sleep Foundation. 1(1), pp.5–8. 10.1016/j.sleh.2014.12.008
5. Dewey J. Sico J. and Moeller J.(2019) Improving Neurology Resident Well-Being Through Appreciative Inquiry: Results of a Pilot Session.(P2. 9–022).
6. Dimou F. M. Eckelbarger D. and Riall T. S.(2016) Surgeon burnout: a systematic review. Journal of the American College of Surgeons. 222(6), p.1230. 10.1016/j.jamcollsurg.2016.03.022
7. Durmer J. S., Dinges D.(2005) Neurocognitive consequences of sleep deprivation. Seminars in Neurology. 25, pp.117–129. 10.1055/s-2005-867080
8. Durning S. J., Capaldi V. F., II, Artino A. R., Jr, Graner J., et al. (2014) A pilot study exploring the relationship between internists' self-reported sleepiness, performance on multiple-choice exam items and prefrontal cortex activity. Medical Teacher. 36(5), pp.434–440. 10.3109/0142159X.2014.888408
9. Durning S. J., Costanzo M., Artino A. R., Jr, Dyrbye L. N., et al. (2013) Functional neuroimaging correlates of burnout among internal medicine residents and faculty members. Frontiers in Psychiatry. 4, p.131. 10.3389/fpsyt.2013.00131
10. Dyrbye L. N., Burke S. E., Hardeman R. R., Herrin J., et al. (2018) Association of clinical specialty with symptoms of burnout and career choice regret among US resident Healthcare Professionals . JAMA. 320(11), pp.1114–1130. 10.1001/jama.2018.12615
11. Ebrahimi S. and Kargar Z.(2018) Occupational stress among medical residents in educational hospitals. Annals of Occupational and Environmental Medicine. 30(1), p.51. 10.1186/s40557-018-0262-8
12. Gardner L. A. and Dubeck D., (2016) Health care worker fatigue. AJN The American Journal of Nursing. 116(8), pp.58–62. 10.1097/01.NAJ.0000490182.21432.85
13. IsHak W. W., Lederer S., Mandili C., Nikravesh R., et al. (2009) Burnout during residency training: a literature review. Journal of Graduate Medical Education. 1(2), pp.236–242. 10.4300/JGME-D-09-00054.1
14. Johns M. W.(1991) A new method for measuring daytime sleepiness: the Epworth sleepiness scale. Sleep. 14(6), pp.540–545. 10.1093/sleep/14.6.540
15. Kane L., (2019) Medscape national physician burnout, depression & suicide report 2019. Available onlineat: https://www.medscape.com/slideshow/2019-lifestyle-burnout-depression-6011056(Accessed: 03/03/2020).
16. Kassam A. Horton J. Shoimer I. and Patten S.(2015) Predictors of well-being in resident Healthcare Professionals : a descriptive and psychometric study. Journal of Graduate Medical Education. 7(1), pp.70–74. 10.4300/JGME-D-14-00022.1
17. Lockley S. W., Barger L. K., Ayas N. T., Rothschild J. M., et al. (2007) Effects of health care provider work hours and sleep deprivation on safety and performance. The Joint Commission Journal on Quality and Patient Safety. 33(11), pp.7–18. 10.1016/S1553-7250(07)33109-7
18. Mannam S.(2019) Are Healthcare Professionals Happy With Their Jobs? Addressing Physician Burnout. Science News. Available at: https://www.jyi.org/2019-july/2019/7/1/are-Healthcare Professionals -happy-with-their-jobs-addressing-physician-burnout(Accessed: 03/03/2020).
19. McMurray J. E., Linzer M., Konrad T. R., Douglas J., et al. (2000) The work lives of women Healthcare Professionals . Journal of General Internal Medicine. 15(6), pp.372–382. 10.1046/j.1525-1497.2000.9908009.x
20. McCormick F., Kadzielski J., Landrigan C. P., Evans B., et al. (2012) Surgeon fatigue: a prospective analysis of the incidence, risk, and intervals of predicted fatigue-related impairment in residents. Archives of Surgery. 147(5), pp.430–435. 10.1001/archsurg.2012.84
21. Owens J. A., (2001) Sleep loss and fatigue in medical training. Current Opinion in Pulmonary Medicine. 7(6), pp.411–418. 10.1097/00063198-200111000-00009
22. Raj K. S.(2016) Well-being in residency: a systematic review. Journal of graduate medical education. Journal of Graduate Medical Education. 8(5), pp.674–684. 10.4300/JGME-D-15-00764.1

23. Rodríiguez-Muñoz A., Moreno-Jimenez B., Fernandez-Mendoza J. J., Olavarrieta-Bernardino S., et al. (2008) Insomnia and quality of sleep among primary care Healthcare Professionals : a gender perspective. Revista de Neurologia. 47(3), p.119. Available at: https://pubmed.ncbi.nlm.nih.gov/18654964/
24. Rose M. Manser T. and Ware J.(2008) Effects of call on sleep and mood in internal medicine residents. Behavioral Sleep Medicine. 6(2), pp.75–88. 10.1080/15402000801952914
25. Rus M. and Sandu M.(2013) Personality factors and job satisfaction levels in military staff employed on a contract basis. Procedia-social and Behavioral Sciences. 92, pp.814–819. 10.1016/j.sbspro.2013.08.759
26. Stucky E. R., Dresselhaus T. R., Dollarhide A., Shively M., et al. (2009) Intern to attending: assessing stress among Healthcare Professionals . Academic Medicine. 84(2), pp.251–257. 10.1097/ACM.0b013e3181938aad
27. Summers S. M., Nagy C. J., April M. D., Kuiper B. W., et al. (2019) The Prevalence of Faculty Physician Burnout in Military Graduate Medical Education Training Programs: A Cross-Sectional Study of Academic Healthcare Professionals in the United States Department of Defense. Military Medicine. 184(9-10), pp.522–530. 10.1093/milmed/usz055
28. Veasey S., Rosen R., Barzansky B., Rosen I., et al. (2002) Sleep loss and fatigue in residency training: a reappraisal. Jama. 288(9), pp.1116–1124. 10.1001/jama.288.9.1116
29. van Wietmarschen H., Tjaden B., van Vliet M., Battjes-Fries, et al. (2018) Effects of mindfulness training on perceived stress, self-compassion, and self-reflection of primary care Healthcare Professionals : a mixed-methods study. BJGP Open. 2(4). 10.3399/bjgpopen18X101621
30. Wallace J. E. Lemaire J. B. and Ghali W. A.(2009) Physician wellness: a missing quality indicator. The Lancet. 374(9702), pp.1714–1721. 10.1016/S0140-6736(09)61424-0
31. Weinger M. B. and Ancoli-Israel S.(2002) Sleep deprivation and clinical performance. Jama. 278(8). 10.1001/jama.287.8.955
32. Whitley T. W. Gallery M. E. Allison E. J. Jr and Revicki D.(1989) Factors associated with stress among emergency medicine residents. Annals of Emergency Medicine. 18(11), pp.1157–1161. 10.1016/S0196-0644(89)80051-4
33. West C. P. Dyrbye L. N. Sloan J. A. and Shanafelt T. D.,2009. (24AD) Single item measures of emotional exhaustion and depersonalization are useful for assessing burnout in medical professionals. Journal of General Internal Medicine. 12, p.1318. 10.1007/s11606-009-1129-z
34. Sleep in America® Poll - Sleep Prioritization and Personal Effectiveness. (2018) Sleep Health. 10.1016/j.sleh.2018.02.007