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The Impact of Shift Work on Nurses' Mental Health and Job Performance: A Cross-Sectional Comparative Study

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Abstract

A study conducted in Bosnia and Herzegovina aimed to investigate the impact of shift work on the psychosocial functioning and quality of life of hospital nursing personnel. The study involved 150 nurses working in specific shifts, with 51% working in specific shifts and 49% following a regular 7-hour daily schedule. The results showed increased stress, reduced coping abilities, and reduced life enjoyment in shift work nurses compared to day-work nurses. Additionally, anxiety, stress, psych organic symptoms were more common in shift work staff. Nurses working in shifts experienced negative externalities such as decreased social functioning and reduced family and leisure time. However, higher satisfaction rates were only shown in compensation. The study highlights the detrimental effects of shift work and contributes to the research gap in understanding its impact on nursing personnel's overall health. Future studies will need to disentangle the exact interplay between work-related factors in healthcare systems and subsequent psychosocial disorders in health personnel. Further research is needed to better understand the effects of shift work on nursing personnel's mental health.

Keywords: shift work - nursing - hospital - psychosocial functioning - quality of life

INTRODUCTION

Shift work is a prevalent practice in nursing, crucial for ensuring uninterrupted patient care. Nonetheless, the irregular hours and disruption of circadian rhythms linked to shift work can substantially impact the health and effectiveness of nurses. This review analyzes the effects of shift work on nurses' physical and mental health, job performance, and general well-being. This review synthesizes current data to elucidate the obstacles and potential options for alleviating the detrimental impacts of shift work on nurses, underscoring the need of organizational support and individual coping techniques (1). Nursing is a job that demands constant care, requiring shift labor to maintain uninterrupted patient support. Although shift work is essential in healthcare, it sometimes results in irregular hours and disrupted sleep habits, negatively impacting the health and effectiveness of nurses. Shift employment inherently poses distinct obstacles, such as heightened exhaustion, sleep disturbances, and an elevated risk of chronic health issues, which can undermine both nurses' well-being and the quality of patient care. Comprehending the impact of shift work on nurses is essential for formulating methods to promote their health and improve their performance. This

review seeks to examine the consequences of shift work on nurses' physical and mental health, job performance, and general well-being, as well as to find potential interventions to alleviate these impacts (2).

Multiple studies have recorded the detrimental health impacts of shift work on nurses. Studies demonstrate that shift work correlates with a heightened risk of cardiovascular disease, gastrointestinal diseases, and metabolic syndrome. Irregular work hours alter circadian rhythms, leading to chronic sleep deprivation, which can cause exhaustion, poor cognitive performance, and mood disorders like anxiety and depression. Shift work adversely impacts nurses' job performance and patient care (3). Fatigue and sleep deprivation can result in diminished awareness, prolonged reaction times, and an increased propensity for errors. Research indicates that nurses engaged in night or rotating shifts experience elevated levels of job-related stress and burnout, adversely affecting their capacity to deliver high-quality care. Furthermore, the work-life equilibrium of nurses is frequently undermined by shift work. Unconventional hours might disrupt personal and familial time, resulting in heightened stress and diminished job satisfaction. This disparity can impact nurses' emotional well-being and lead to an increased turnover rate in the profession (4).

Shift work on nurses can have significant negative impacts on their health and performance. Healthcare organizations can implement policies to promote healthier shift schedules, such as limiting consecutive night shifts and providing adequate rest periods between shifts. Individual strategies for mitigating the effects of shift work include practicing good sleep hygiene, maintaining a healthy diet, engaging in regular physical activity, and using relaxation techniques (5). Nurses can also benefit from educational programs that provide information on health risks associated with shift work and coping strategies. Technology can also help nurses manage their health more effectively by using wearable devices and mobile applications that monitor sleep patterns and alertness levels. The demanding nature of nursing, including long hours, shift work, and high-stress environments, significantly impacts both physical and mental health, affecting job performance and patient care quality (6). Chronic pain and injuries related to their job can result in absenteeism, reduced productivity, and increased likelihood of leaving the profession. Shift work, a common requirement in nursing, can lead to sleep disorders, fatigue, and an increased risk of chronic conditions such as cardiovascular disease, diabetes, and gastrointestinal problems. Nurses working night shifts or rotating shifts often suffer from sleep deprivation, which impairs cognitive function and can lead to errors in patient care. Chronic stress associated with shift work can also contribute to mental health issues, including anxiety, depression, and burnout (7).

Mental health is a crucial aspect of nurse health and performance, as the high-stress environment of healthcare can lead to burnout, characterized by emotional exhaustion, depersonalization, and reduced personal accomplishment. This burnout affects nurses' well-being, job performance, and patient satisfaction, resulting in increased medical errors and higher turnover rates. Healthy nurses are more likely to provide high-quality care, exhibit better decision-making skills, and have higher job satisfaction (8). Conversely, health issues can lead to decreased performance, increased absenteeism, and higher errors, compromise patient safety and care quality. To address nurse health

and performance, healthcare organizations should implement policies and practices that support nurse well-being, such as providing ergonomic equipment, safe lifting practices, and adequate staffing levels. They should also promote healthy work environments, including access to mental health resources, stress management programs, and professional development opportunities (9). Shift work policies should be designed to minimize negative impacts on nurse health, such as limiting consecutive night shifts, ensuring adequate rest periods, and providing regular sleep. Encouraging healthy lifestyle practices, such as regular physical activity, balanced nutrition, and good sleep hygiene, is also essential. Support systems, such as peer support groups, mentoring programs, and counseling services, can help nurses manage the emotional and psychological demands of their work. Creating a culture of support and open communication within healthcare organizations can foster resilience and reduce the risk of burnout (10).

Materials & Methods

This study utilized a **comparative cross-sectional design** conducted at the University Clinical Hospital Mostar from February 1st to July 14th, 2023. It involved **150 hospital nursing professionals**, of whom 86% were female (130 participants) and 14% were male (20 participants), with an average age of 33.3 years. Participants were categorized into two groups: **shift workers** (51%, 80 individuals) following a **12-hour day shift / 24 hours off / 12-hour night shift / 48 hours off schedule** and those adhering to a **regular daily schedule** (49%, 77 individuals) working 7 hours daily from 7:30 AM to 2:30 PM.

Ethical approval was granted by the Ethical Committee of the University Clinical Hospital Mostar. All participants were informed about the study's purpose, confidentiality, and anonymity, and provided written consent. The research adhered to the guidelines of the Helsinki Declaration.

The methodology included the administration of the **Standard Shiftwork Index (SSI) questionnaire**, which evaluated psychosocial functioning, anxiety, and social-family situations. The SSI's scales incorporated psychological functioning (6 items), anxiety symptoms (somatic and cognitive), and social-family satisfaction (4 items). Quality of life was assessed using a 21-item scale adapted from Krizmani and Kolesari, which evaluated domains like emotional relationships, family satisfaction, and material status.

Data collection and analysis utilized **MS Excel** and **SPSS version 20.0**. Statistical tests applied included descriptive methods, the chi-square test for categorical variables, t-tests for independent samples, and one-way ANOVA for continuous variables. Statistical significance was set at $\mathbf{p<0.05}$. This methodological approach facilitated the comparison of **psychological, social, and quality-of-life metrics** between the two groups, aiming to understand the specific impacts of shift work on nursing professionals.

Results

This study demonstrated statistically significant disparities between the two subject groups regarding stress frequency, diminished capacity for enjoying typical daily activities, and an inability to manage their own difficulties. In comparison to individuals adhering to a standard daily schedule, those engaged in shift work report heightened stress, less opportunities for confrontation, and diminished capacity to enjoy daily activities. In contrast, the disparities in diminished focus, feelings of futility in the workplace, and loss of confidence between the two groups of individuals were not statistically significant. The disparities in overall psychological functioning between the two groups were not statistically significant (Table 1). The variations in reactions to specific items on the anxiety scale, along with the overall results concerning physical and cognitive symptoms of anxiety, were not statistically significant. Statistically significant variations in the occurrence of heart palpitations, generalized anxiousness, and abdominal tightness between the two groups have been identified.

The aforementioned symptoms were markedly more pronounced among shift workers compared to those on a standard day schedule. Moreover, the disparity in overall somatic symptoms of anxiety between the two groups was statistically significant, with participants working in shifts exhibiting more pronounced symptoms. The variations in the expression of individual symptoms and total cognitive symptoms between the two groups were not statistically significant (Table 2).

Table 1. A comparison of self-evaluation in individual segments of psychological functioning and total psychological functioning between the two groups of hospital nursing professionals (daily schedule vs. shift work)

Segment	Group	M	SD	t	df	p
Concentration	Daily Schedule	2.90	0.852	0.229	155	0.819
	Shift Work	2.86	0.978			
Sense of Usefulness	Daily Schedule	1.87	0.496	1.388	149	0.167
	Shift Work	1.75	0.609			
Stress Frequency	Daily Schedule	2.49	0.941	-2.064	155	0.041*
	Shift Work	2.80	0.920			
Enjoying Daily Activities	Daily Schedule	2.17	0.785	-2.356	155	0.020*
	Shift Work	2.45	0.710			
Strategies of Confrontation	Daily Schedule	2.08	0.602	-2.081	155	0.039*
	Shift Work	2.29	0.660			
Self-Confidence	Daily Schedule	1.49	0.681	-1.320	155	0.189
	Shift Work	1.65	0.797			
Total Psychological Functioning	Daily Schedule	2.17	0.406	-1.867	154	0.064
	Shift Work	2.30	0.491			

Table 2. A comparison of individual symptoms of anxiety and total somatic/cognitive symptoms between the two groups of hospital nursing professionals (daily schedule vs. shift work)

Symptom	Group	M	SD	t	df	p
Sweating	Daily Schedule	2.35	1.365	-1.425	155	0.156
	Shift Work	2.66	1.377			
Heart Palpitations	Daily Schedule	2.38	1.288	-2.504	155	0.013*
	Shift Work	2.91	1.389			

Symptom	Group	M	SD	t	df	p
Concerns	Daily Schedule	3.17	1.390	-1.859	155	0.065
	Shift Work	3.58	1.348			
Whole-Body Nervousness	Daily Schedule	2.58	1.351	-2.827	155	0.005*
	Shift Work	3.21	1.429			
Diarrhea	Daily Schedule	1.86	1.254	0.101	155	0.920
	Shift Work	1.84	1.185			
Anxiety Images	Daily Schedule	1.77	1.180	0.358	155	0.721
	Shift Work	1.70	1.141			
Stomach Tension	Daily Schedule	2.36	1.356	-1.982	155	0.049*
	Shift Work	2.81	1.476			
Somatic Symptoms of Anxiety	Daily Schedule	2.31	1.034	-2.431	155	0.016*
	Shift Work	2.69	0.928			
Cognitive Symptoms of Anxiety	Daily Schedule	2.47	1.062	-1.049	155	0.296
	Shift Work	2.64	0.968			

Discussion

This study sought to examine psychological concerns arising from the nature of nurse employment, namely conventional day shifts versus shift work. This initial research undertaking investigates the particular shift work pattern (12-hour day shift / 24 hours off / 12-hour night shift / 48 hours off) of nurses employed in hospitals. Our research indicates that shift work may significantly influence psychological and psychoorganic changes, profoundly affecting the home life of the nursing workers involved in the study. Therefore, we might appropriately inquire whether nursing is evolving into an intrinsically unhealthy vocation.

The literature has demonstrated that the nursing profession has elevated stress levels (11). Our findings indicate elevated stress levels and diminished coping skills and life satisfaction among shift work nurses compared to their day work counterparts. A recent study by Leyva-Vela et al. (2018) from Spain demonstrated that shift work elevates psychosocial risks, eating disorders, and trait anxiety; in contrast, nursing personnel who worked exclusively during the day displayed higher esteem compared to their shift-working counterparts (12). Our study demonstrates a strong correlation between sleep disorders and shift work. A new systematic evaluation by Rosa et al. (2019) corroborates this by examining the impact of shift work on nurses' health (13). Nonetheless, a recent integrative analysis examining the effects of shift work on the psychological functioning and resilience of nurses found no data indicating that anxiety is more prevalent among nurses working shifts (14). Consequently, additional longitudinal study efforts will be required for a more accurate understanding of this matter.

Family and social dynamics must also be considered. In our study, nurses who worked in shifts encountered adverse externalities, including diminished social functioning and decreased family time. This aligns with the previously cited study from Spain (12). Additional concerns encompass inadequate time for domestic responsibilities (or personal care), while in some cases, their partners opposed their professional choices owing to ongoing work-related challenges and the chronic stress they carry home (15).

Similar to the shift work patterns examined in our study, numerous healthcare institutions globally have structured care delivery into 12-hour work shifts. Despite significant differences from the shift pattern in our research, studies indicate that nursing staff engaged in such schedules face heightened stress, particularly among younger nurses with limited professional experience (16). Our findings significantly advance the discipline, which remains fraught with gaps in comprehending the precise effects of shift work on the health of nursing staff. Furthermore, this study domain necessitates greater consistency, as findings from many research teams are frequently disjointed. The primary 'important factors' to evaluate in study-to-study comparisons include shift duration, number of night shifts and rest days, work commencement and conclusion hours, frequency of shift rotation, and the regularity/predictability of shift schedules (13).

Study limitations and special considerations

Owing to the limited number of male participants in our sample, aggregate results for all research subjects were reported, and gender disparities were not analyzed. The acquired data relies on subjective evaluations; no objective assessment of physical or psychological overload has been conducted. Despite a sufficient sample size, a limitation of the study is its monocentric design, which partially restricts the generalizability of the findings. The result distributions for primary outcome measures exhibit normality for certain variables, whilst others dramatically vary from the normal distribution. The distribution of values on the work satisfaction scale and the overall psychological functioning scale remains statistically consistent with normality in both groups. In contrast, the score distributions for specific components on the life satisfaction subscale and physical anxiety symptoms exhibit a normal distribution just within the shift work group. The score distributions for specific quality of life factors exhibit significant deviations from normality; intimate life, social environment, and overall instant gratification factors display negative skewness, whereas material factors and perceptions of future satisfaction show positive skewness (shifted towards lower values).

Conclusions

Nursing is an intrinsically difficult profession linked to a specific degree of psychological anguish. Revitalizing nursing as a predominantly healthy profession may need interventions focused on improving organizational climate and supervisory support. Australian researchers recently emphasized this specific issue as a potential avenue for alleviating negative health effects encountered by shift workers. Prior to implementing substantial interventions, particularly in developing nations, it is imperative to acquire more comprehensive data to enhance the understanding of the adverse effects associated with shift work. This data is essential not only for delineating the burden of this public health concern but also for guiding preventive measures. Our research aligns precisely with those principles. Future prospective and interventional research will be essential to clarify the precise interaction between work-related elements in healthcare systems and future psychological problems.

References

Blkher Mohammed Alkery, Abdullah Hassan Eid Barbari, Hamed Abdulrahman Al-Sahfi ,Saleh Salah Aljehani, Zohier omar Saleh Alsaied, Sarah Fari Th Alsalmi, Ali Essa Abadi, Salha Ali Mohamad Alasmary , Aisha Humeedan Alshaybani, Fatimah Saeed Alzahrani
Esmaily A, Jambarsang S, Mohammadian F, Mehrparvar AH. Effect of shift work on working memory, attention and response time in nurses. International Journal of Occupational Safety and Ergonomics. 2022 Apr 3;28(2):1085-90.
Di Muzio M, Diella G, Di Simone E, Novelli L, Alfonsi V, Scarpelli S, Annarumma L, Salfi F, Pazzaglia M, Giannini AM, De Gennaro L. Nurses and night shifts: poor sleep quality exacerbates psychomotor performance. Frontiers in neuroscience. 2020 Oct 14;14:579938.
Leso V, Fontana L, Caturano A, Vetrani I, Fedele M, Iavicoli I. Impact of shift work and long working hours on worker cognitive functions: current evidence and future research needs. International journal of environmental research and public health. 2021 Jun 17;18(12):6540.
Ejebu OZ, Dall'Ora C, Griffiths P. Nurses' experiences and preferences around shift patterns: a scoping review. PLoS One. 2021 Aug 16;16(8):e0256300.
Ljevak I, Vasilj I, Ćurlin M, Šaravanja N, Meštrović T, Šimić J, Neuberg M. The impact of shift work on psychosocial functioning and quality of life among hospital-employed nurses: a cross-sectional comparative study. Psychiatria Danubina. 2020 Jun 10;32(suppl. 2):262-8.
Brown JP, Martin D, Nagaria Z, Verceles AC, Jobe SL, Wickwire EM. Mental health consequences of shift work: an updated review. Current Psychiatry Reports. 2020 Feb;22:1-7.
Khan WA, Conduit R, Kennedy GA, Jackson ML. The relationship between shift-work, sleep, and mental health among paramedics in Australia. Sleep Health. 2020 Jun 1;6(3):330-7.
d'Ettorre G, Pellicani V, Caroli A, Greco M. Shift work sleep disorder and job stress in shift nurses: implications for preventive interventions. La Medicina del lavoro. 2020;111(3):195.
Saedpanah K, Ghasemi M, Akbari H, Adibzadeh A, Akbari H. Effects of workload and job stress on the shift work disorders among nurses: PLS SEM modeling. European Journal of Translational Myology. 2022 Nov 21;33(1):10909.
Kang J, Noh W, Lee Y. Sleep quality among shift-work nurses: A systematic review and meta-analysis. Applied nursing research. 2020 Apr 1;52:151227.
Neuberg M, Meštrović T, Ribić R, Šubarić M, Canjuga I, Kozina G. Contrasting Vantage Points between Caregivers and Residents on the Perception of Elder Abuse and Neglect During Long-Term Care. PubMed [Internet]. 2019 Sep 1;31(Suppl 3):345–53. Available from: https://pubmed.ncbi.nlm.nih.gov/31488751
Leyva-Vela B, Llorente-Cantarero FJ, Henarejos-Alarcón S, Martínez-Rodríguez A. Psychosocial and physiological risks of shift work in nurses: a cross-sectional study. Central European Journal of Public Health [Internet]. 2018 Sep 30;26(3):183–9. Available from: https://doi.org/10.21101/cejph.a4817
Rosa D, Terzoni S, Dellafiore F, Destrebecq A. Systematic review of shift work and nurses' health. Occupational Medicine [Internet]. 2019 Apr 29;69(4):237–43. Available from: https://doi.org/10.1093/occmed/kqz063
Tahghighi M, Rees CS, Brown JA, Breen LJ, Hegney D. What is the impact of shift work on the psychological functioning and resilience of nurses? An integrative review. Journal of Advanced Nursing [Internet]. 2017 Feb 23;73(9):2065–83. Available from: https://doi.org/10.1111/jan.13283
Ganesan S, Magee M, Stone JE, Mulhall MD, Collins A, Howard ME, Lockley SW, Rajaratnam SM, Sletten TL. The impact of shift work on sleep, alertness and performance in healthcare workers. Scientific reports. 2019 Mar 15;9(1):4635.
Al-Marashi TM, Al-Zghool MM. Factors influencing job performance among nurses who are working in Saudi mental health hospitals. American Journal of Nursing Research. 2018;6(2):67-81.