Texila International Journal of Public Health
ISSN: 2520-3134
DOI: 10.21522/TIJPH.2013.12.04.Art065

Effect of Shift Work on One's Physical and Psychological Well-Being Among Nursey Employed in Saveetha Hospital

Linda Xavier[1*], Prenita[1], Pooja G.R[1]., Pradeepan[1]
Department of Child Health Nursing, Saveetha College of Nursing, Saveetha Institute of Medical and Technical Science, Saveetha University Chennai, Tamil Nadu, India 602105

Abstract

Shift work is viewed as critical to the healthcare system because it ensures treatment continuity in residential and hospital settings. The two most important parts of shift work are scheduling and rotation; nurses are essentially required to follow schedules that include night shift work and 24-hour care. In this new work arrangement, shift workers are both producers and sufferers.4 One of the most common causes of circadian rhythm disturbance is shift work, particularly night shift employment, which causes significant alterations in sleep patterns and biological processes. The purpose of this study was to determine whether shift work including nights, as opposed to day work exclusively, is linked with risk factors that predispose nurses to poorer health outcomes and lower job satisfaction. This cross-sectional study was conducted between March 1, 2022, and April 31, 2022, in 17 wards of Saveetha Medical College & Hospital. This study included 213 nurses who worked rotating night shifts and 65 on day shifts. The data collection tool was the "Standard Shift Work Index," which has been verified in Italian. Data were statistically analyzed. The response rate was 85%. The nurses engaged in rotating night shifts were statistically significantly young, single, and had undergraduate & postgraduate degrees in nursing. They reported the lowest mean score in the items of job satisfaction, quality and quantity of sleep, with more frequent chronic fatigue, and psychological, and cardiovascular symptoms in comparison with the morning shift workers, in a statistically significant way.

Keywords: *Job Satisfaction, Nurses, Shift Work.*

Introduction

About 20% of workers in Europe and America work night shifts, making up about a fifth of the global workforce. In this new workplace structure, "shift workers are victims and creators at the same time." the effects of shift work on employees' physical well-being. Discovered a shift work-related maladaptation syndrome marked by difficulty sleeping or awakening, gastrointestinal issues, and a higher risk of cardiovascular diseases [1]. The symptoms of a syndrome known as "shift work disorder "include exhaustion, insomnia, excessive daytime sleepiness, and changes in the circadian rhythm of sleep and wakefulness. The sleep quality among night shift nurses was found to be significantly lower than that of day and night-rotating workers. Sleep loss brought on by working night shifts affects daily alertness and job performance, favouring weariness [2]. This disorder, which is frequently linked to shifts, is most likely caused by a desynchronized circadian rhythm or decreased sleep, which is comparable to jet lag syndrome. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) lists shift work-related sleep disruptions under the category of Circadian Rhythm Sleep-Wake Disorders, irregular type

Received:11.06.2024 ***Accepted: 29.08.2024*** ***Published on: 27.12.2024***
****Corresponding Author: linda.scon@saveetha.com***

[3]. This manual states that a high percentage of night shift workers (5–10%) have this disorder. Shift work-related sleep disturbance is closely linked to chronic fatigue [4] Nurses who worked night shifts experienced more severe symptoms of fatigue than those who worked during the day. These symptoms included "sleepiness and lack of energy, “impaired concentration," and "feelings of discomfort. "The weariness that comes with working nights can lower patient care quality and raise the possibility of accidents and human error Furthermore, exhaustion lowers productivity and job satisfaction, favouring absences from work due to illness, absenteeism, turnover, and job attrition, and frequent leading to the use of psychiatric medications [5] The primary cause of nurses' medication administration errors is still fatigue. Several gastrointestinal conditions and symptoms, including dyspepsia, gastritis, colitis, peptic ulcers, hyperacidity bingeing, back door trots, stifled, and ache stomach rumblings, flatulence, and gastro-duodenitis, have been linked to shift work, [6, 7] The gastrointestinal symptoms that shift workers report may be caused by several factors, including medication, psychosocial stress, altered menstrual cycles in women, and changes in the circadian rhythm of stomach dysfunction and foods consumed [8].

Materials and Methods

The current study was conducted for 3 months from February 2023 till April 2023 in several wards (neurology-stroke unit, geriatrics, post-acute geriatric treatment, emergency medicine, metabolic medicine, cardiovascular medicine, orthopaedics, rehabilitation medicine, neurosurgery, post-acute extensive phase rehabilitation, vascular surgery, general surgery, medicine and gastro-enter ology and other departments of host institutions. A total of 200 nurses who fulfilled and met the inclusion criteria were recruited as study participants.

Study Design & Data Collection

A Cross-sectional Study was done to assess the effect of Shift work on one’s physical and psychological well-being among nurses employed in Saveetha Hospital After obtaining the ethical clearance from the Institutional Ethical Committee (IEC) of Saveetha Institute of Medical and Technical Sciences and formal permission from the departmental head of Obstetrics and Gynecology, the study was conducted. After recruiting the nurses through the Convenience sampling technique, all 213 nurses regularly working in three Rotational Night Shifts and 65 in Day Shifts were recruited for the study “Standard Shift Work Index” (SSI), Standardized Scale. Was given to the Participants. 4 This Questionnaire includes work situation, General job satisfaction, Information on shifts, Personal habits, Sleep, Chronic fatigue, Physical health conditions, and General health questionnaire, it also includes Demographic and professional information. The document consists of five items: age group, gender, spousal relationship, professional skill, employment agreement, and working time**.**

Results

Table 1 describes the day shift and night shift of the nurses working in the hospital in the morning, Afternoon, and night shifts with the starting time and end time of the work.

Table 1. Clinical Characteristics of Night Shift and Morning Shift

Shift scheduling Information	NS Nurses	MS Nurses
Morning Work Shift, Start Time, n (%)		
6.05 am	2 (1)	0 (0)

7.05 am	177 (99)	30 (57)
7.35 am	0 (0)	4(7)
8.05 am	0 (0)	15 (28)
8.35 am	0 (0)	3 (6)
Morning Work Shift, finish Time, n (%)		
12.05 pm	0 (0)	1 (2)
1.05 pm	129 (72)	24 (45)
1.35 pm	49 (27)	5(10)
2.05 pm	1 (1)	8 (15)
3.05 pm	0 (0)	15(28)
Afternoon Work Shift, Start Time, n (%)		
11.30 am	0 (0)	1 (2)
12.00 pm	129 (72)	6 (11)
1.00 pm	49 (27)	41(77)
1.30 pm	1 (1)	0(0)
2.00 pm	0 (0)	15(28)
Afternoon Work Shift, Start Time, n (%)		
1.30 pm	1 (1)	0(0)
2.00 pm	0 (0)	15(28)
Night: Work Shift Start time, n (%)		
1.30 pm	1 (1)	0(0)
Night: Work Shift End time, n (%)		
2.00 pm	0 (0)	15(28)

MS: Morning Shift; NS: Night Shift

Table 2. Statistics and Clinical Features: Comparison between NS and MS Nurses

Variables	**NS Nurses**	**MS Nurses**	**P-value**
Age (years)m±SD	38±7	45±6	<0.001
Sex n (%)			
Male	52 (28)	11 (21)	0.294
Female	27 (71)	42 (78)	
Marital Status n (%)			
Single	56 (30)	5 (9)	
Married	77 (43)	34 (64)	0.002
Cohabiting	37 (21)	9 (16)	
Divorced	8 (3)	5 (8)	
Education n (%)			
Registered Nurse	11 (6)	4 (8)	
Undergraduate degree	149 (83)	40 (75)	0.003
Postgraduate degree	18 (10)	8 (15)	
Employment Agreement n (%)			
Temporary	26 (13)	2 (4)	0.032
Permanent	153 (85)	51 (96)	

Work time			
Full time	165 (92)	49 (92)	1.000
Part-Time	14(8)	4 (8)	
Seniority in years m±SD	14.1±7.4	22.5±7.5	<0.001
Hours worked Per Week m±SD	353±2.5	35.3±3.0	0.926
Time worked in the present shift system m±SD	11.4±7.0	10.0±7.0	0.229

The population and specialization of the nurses are shown in Table 2. Midnight workers were statistically significantly younger than morning shift workers (38±7 vs 45±6 SD years old on average; unpaired test; P< 0.001) In both groups 70%of nurses were female. In all, 31% of midnight workers were single, compared with 9% of morning shift workers, in whom spousal relationship prevailed (64%)in a statistically significant way (chi-square test; P) midnight workers more frequently had a degree in nursing, compared with morning shift nurses (82.5% vs 74.5%, chi-square test, P< 0.003) but they less frequently had an employment agreement for an unknown duration in contrast to another group (86%vs 96%, chi-square test, P< 0.033). The skilfully l experience, evaluated as years of work, statistically significantly differed between the two groups of nurses: 14.1 years on average in midnight nurses compared to 22.5 in morning shift nurses (unpaired-test, P< 0.001) whereas the mean hours spent at work by the two groups did not show any statistically significant difference.

Table 3. Job Satisfaction: Comparison between NS and MS Nurses

Answers to SSI "job satisfaction" items	**NS nurses (n=179)**	**MS nurses (n=53)**	**P-value**
Generally speaking, I am very pleased with my nursing	4.9±1.6	5.6±1.1	0.001
I often think of leaving this job	2.7±1.8	2.1±1.6	0.057
I am usually satisfied with the kinds of hustle I do in this job	5.1±1.8	55.8±0.9	0.002
Most people in this job are self-satisfied with it	3.5±1.53	1±1.7	0.064
Humans in this job often think of withdrawing	4.0±1.8	3.1±1.8	0.003
General work satisfaction	22.1±5.7	26.4±4.2	<0.001

Regarding job satisfaction, the Midnight shift professionals reported the lowest mean score (22.1±5.7SD), whereas. Daily shift workers reported the highest mean score (26.4±4.2SD), with a statistically significant difference (unpaired t-test, P< 0.001) (Table 3). According to our research, there is a direct link between stress-related physical and psychological symptoms and lower job satisfaction, which is consistent with other authors' findings [9] The body of research consistently shows that, compared to other shift patterns, RNS work causes circadian strain, increases the amount of physical and

psychological symptoms, and increases the risk for various chronic diseases [10].

Table 4. Fatigue: Comparison between NS and MS Nurses

Answers to SSI "fatigue" items	NS nurses (n-179) m ± SD	MS nurses (n-53) m ± SD	P- Value
I generally think I have an abundance of energy	3.0±0.7	3.0±0.7	0.285
Usually, I'm exhausted	2.0±0.9	2.3±1	0.116
I feel energetic	3.12±0.6	3.21±0.6	0.583
Most of the time I feel exhausted	2.5±0.9	2.4±0.9	0.289
Generally, I feel energized	2.8±0.8	2.7±0.9	0.415
Usually, I feel pretty drowsy	1.9±0.9	1.5±0.6	**0.007**
Generally, feel awake	3.3±0.7	3.2±0.7	0.337
I usually feel worn out	2.4±0.9	1.8±0.7	**<0.001**
Most of the time, I feel energetic	3.11±0.9	3.11±0.7	0.841
I feel tired most of the time	2.3±0.9	2.0±0.8	**0.026**
Overall weariness	26.3±6.3	24.5±4.8	0.060

Concerning fatigue shown in Table 4, the Values in the Bold are statistically significant some items, but not the total scale, reported statistically significant higher scores in the group of rotating shift workers compared to other nurses (unpaired *t*-test): "I usually feel pretty drowsy ($P = 0.007$), "I usually feel worn out ($P< 0.001$), and "I feel tired most of the time" ($P = 0.026$). The RNS nurses in our sample, although younger and having fewer family responsibilities than others, were more likely to exhibit chronic fatigue, sleep disturbances, cardiovascular, and mild mental symptoms [11]. Our study highlighted. As Indicated RNS nurses were more likely to experience sleep disturbances, which affected their performance at work later on, whereas DS nurses showed a decreased chance of acquiring insomnia [12]. These findings, together with those of other studies, point to the possibility that RNS employment is a stressor. Stressors can cause modest somatic changes and prolonged discomfort, which can increase the risk of developing physical and mental illnesses [13]. We must stress that the fast consecutive and counterclockwise (after-no/on/morning/night) rotation [14].

Table 5. Comparison of Sleep and Fatigue between Night Shift and Morning Shift

Questions	**NS nurses (n=179) m ± SD**	**MS nurses (n=53) m ± SD**	**P-value**
How do you feel about the amount of Sleep you normally get?			
Morning Shifts	2.7±1.3	3.3±0.9	**<0.001**
Afternoon shifts	3.7±0.8	3.8±0.6	0.388
Night Shifts	2.4±1.2	-	-
Days off	3.6±1	4±0.7	**0.054**
How well do you normally sleep?			

Morning Shifts	2.4±1	3.4 ± 0.8	**<0.001**
Afternoon shifts	3.5±0.8	3.8±0.8	0.023
Night Shifts	2.5±1.2	-	-
Days off	3.8±0.9	4.±0.8	**0.218**
How rested do you normally feel after sleep?			
Morning Shifts	2.4±0.9	3.3±0.9	**<0.001**
Afternoon shifts	3.4±0.8	3.8±0.8	0.006
Night Shifts	2.4±1.2	-	-
Days off	3.7±0.9	4.±0.7	**0.052**
Do you ever feel tired on what type of shift?			
Morning Shifts	3.5±0.9	3.4±0.96	**0.479**
Afternoon shifts	2.9±1	2.9±0.8	0.892
Night Shifts	3.8±1.1	-	-
Days off	2.5±1.1	2.6±0.9	**0.632**
Total Score			
Morning Shifts	11.3±12.1	13.9±2.9	**<0.001**
Afternoon shifts	9.4±2.1	10.2±2.6	0.058
Night Shifts	14.4±3.8	-	-
Days off	8.5±2.4	9.4±3.1	**0.099**

Comparing the Sleep and fatigue includes many questions aimed at investigating "sleep habits." We chose only four questions among all the sleep and fatigue items, as shown in Table 5, which are evaluated by a Likert scale ranging from 1 (almost never) to 5 (almost always), "a score, of 5 being associated with high sleep disturbance and a general feeling of vigour and energy.

Discussion

When compared to other research, this one had a comparatively high response rate, which suggests that this problem may affect professional well-being indirectly [15]. The two nurse groups' professional and demographic traits were very different from one another, and this was indicative of the specific work environment that assigns NS to younger, unmarried, less experienced, and generally healthy nurses [16]. This disparity in the distribution of workers between NS and MS may be the result of a global healthcare system's natural selection of professionals depending on their health and family circumstances, or it may be a form of apprenticeship program for less experienced workers. The NS group's larger percentage of degree-holding nurses was likely caused by the combination of their younger age and the relatively recent availability of university nursing programs [17]. Nonetheless, the number of hours worked by NS and MS nurses in our sample was equal. We have to remind ourselves that because of the fast sequentially and backward shift rotation, the counterclockwise (afternoon/morning/night) and rapidly successive rotation that our hospital used did not encourage relaxation and sleep between shifts [18]. The research suggests that distinct clockwise rotations—morning, afternoon, and night—as well as a slow sequential rotation would be more protective since nurses need at least four days to acclimate their circadian cycles of cortisol secretions following a night shift [19]. When compared to DS nurses, RNS employees reported lower scores for both quantity and quality of sleep during their morning shifts. This suggests that

morning shifts shouldn't begin too early to allow for sufficient sleep and energy regeneration. According to our research, working night shifts can often cause sleep disorders, similar to jet lag. These disorders are currently underappreciated, but they can increase the risk of accidents and poor mental and physical health [20].

Conclusion

It has helped to draw attention to the fact that RNS work can be a stressor that affects employees' health and well-being, particularly regarding job satisfaction, sleep patterns (both quantity and quality), and psychological and cardiovascular issues that frequently result in chronic fatigue. Nurses on rotating night shifts require extra care and regular health examinations since they are more likely to have negative health effects and job discontent. A significant degree of responsibility and close attention are needed when caring for patients as a nurse. Therefore, it is important to optimize working circumstances to ensure that patients receive treatment of a suitable quality during the whole day. We propose that the implementation of ergonomic standards targeted at mitigating the negative impacts of shift schedules can enable a better organization of health care, in line with the World Health Organization's designation of shift work as a risk factor for several health conditions. It stands to reason that a shift work schedule that is more considerate of employees' health and well-being could enhance their quality of life.

Conflict of interest

There is no conflict of interest.

References

[1]. Parent-Thirion, A., Vermeylen, G., van Houten., G.,2016, Fifth European working conditions survey: "European Foundation for the improvement of living and working conditions 5(12) 149-150.

[2]. Boivin D. B., Boudreau P., 2014 Pathology Biology : Impacts of shift work on sleep and circadian rhythms 62(5):292–301.

[3]. Korompeli, A., Muurlink, O., Tzavara, C., Velonakis, E., Lemonidou, C., Sourtzi, P., 2014, Safety Health Work: Influence of shiftwork on Greek nursing personnel 5(2):73–79.

[4]. Burch, J. B., Yost, M. G., Johnson, W., Allen, E., 2005, *Journal of Occupational and Environmental Medicine: Melatonin, sleep, and shift work adaptation* 47(9):893–901.

[5]. Costa, G., 2010, Shift work and health: current problems and preventive actions. *Safe Health Work 1*(2):112–123.

[6]. Costa G, Accattoli M. P., Garbarino S., Magnavita N., Roscelli F., 2013, Med Lava Sleep disorders and work: guidelines for health surveillance, risk management and prevention 104(4):251–266.

[7]. Matheson, A., O'Brien, L., Reid, J. A., 2014, *Journal of Clinical Nursing* : *The impact of shift work on health: A literature review* 23(24):3309–3320.

[8]. Black, J. E., Hull ,S. G., Tiller, J., Yang, R., Harsh, J. R., 2010, Journal of Clinical Sleep Medicine: The long-term tolerability and efficacy of armodafinil in patients with excessive sleepiness associated with treated obstructive sleep apnea, shift work disorder, or narcolepsy: an open-label extension study 6(5):458–466.

[9]. Schwartz, J. R., Khan, A., McCall, W. V., Weintraub, J., Tiller 2010, *Journal of Clinical Sleep Medicine:Tolerability and efficacy ofarmodafinil in naïve patients with excessive sleepiness associated with obstructive sleep apnea, shift work disorder, or narcolepsy: A 12-month, open-label, flexible-dose study with an extension period*. 6(5):450–457.

[10]. Waage, S., Pallesen, S., Moen, B. E., Magerøy, N., Flo, E., Di Milia, L., Bjorvatn B.,

2014 *Journal of Sleep Medicine Predictors of shift work disorder among nurses: A longitudinal study*15(12):1449–1455.

[11]. Flo, E., Pallesen, S., Moen, B. E., Waage, S., Bjorvatn B., 2014, Occupational and Environmental Medicine: Short rest periods between work shifts predict sleep and health problems in nurses at 1-year follow-up 71(8):555–561.

[12]. Stimpfel, A. W., Brewer, C. S., Kovner, C. T., 2015, *International Journal of Nursing Studies: Scheduling and shift work characteristics associated with risk for occupational injury in newly licensed registered nurses: An observational study* 52(11):1686–1693.

[13]. Shahriari M., Shamali M., Yazdannik A., 2014, *Iranian Journal of Midwifery and Nursing Research: The Relationship between Fixed and Rotating Shifts with Job Burnout in Nurses Working in Critical Care Areas* 5(19):360–365.

[14]. Saberi, H. R., Moravveji, A. R., 2010, *Iraninan Journal of Science: Gastrointestinal Complaints in Shift-Working and Day-Working Nurses Circadian Rhythms* (8):1–4.

[15]. Voigt, R. M., Forsyth, C. B., Keshavarzian, A., 2019, Circadian Rhythms: A Regulator of Gastrointestinal Health and Dysfunction. Expert Review Gastroenterology & Hepatology, 6(13):411–442.

[16]. James, S. M., Honn, K. A., Gaddameedhi S., Van Dongen, H. P. A.,2017, Current Sleep Medicine Reports in Shift Work: Disrupted Circadian Rhythms and Sleep Implications for Health and Well-Being 7(3):104–112.

[17]. Cheng, P., Tallent, G., Bender, T. J., Tran K. M., Drake C. L. 2017, *Journal of Biological Rhythm: Shift Work and Cognitive Flexibility: Decomposing Task Performance* 3(2)143–153.

[18]. Seong, J., Son S., Min, A., 2022, *Journal of Advanced Nursing: Effect of Sleep on Alertness at Work among Fixed Night Shift Nurses: A Prospective Observational Study* 7(8)3197–3206.

[19]. De Hert, S., 2020: Local and Regional Anesthesia Burnout in Healthcare Workers: Prevalence, Impact and Preventative Strategies 5(13)171–183.