

## Impact of Shift Work on Productivity of Nurses in Hospitals: Evidence from Kerala

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### Abstract

Shift work is an essential practice in healthcare to ensure continuous patient care. However, irregular and rotating shifts can negatively affect nurses' health, well-being, and productivity. This study examines the impact of shift work on employee productivity among nurses at various hospitals in Kerala. A descriptive research design was used, and data were collected from 132 nurses using structured questionnaires. The findings reveal that shift work significantly increases fatigue and affects patient care quality, while its impact on burnout is not statistically significant. The study highlights the need for effective shift management strategies to improve nurse productivity and overall healthcare quality.

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### Introduction

In the healthcare system, nurses play a vital role in providing continuous patient care. Hospitals operate 24 hours a day, requiring nurses to work in shifts such as day, evening, and night duties. While shift work ensures uninterrupted healthcare services, it often disrupts the natural biological rhythm of nurses.

Irregular and rotating shifts can lead to sleep disturbances, fatigue, stress, and reduced cognitive performance. These issues not only affect nurses' health but also reduce their productivity and increase the risk of errors in patient care. Therefore, understanding the impact of shift work on employee productivity is essential for improving healthcare efficiency and patient outcomes.

### Review of related Literature

Shift work plays a vital role in ensuring continuous patient care, but it has significant effects on nurses' health and performance. A study by Marian Wilson (2020) found that night shift nurses experience poorer sleep quality and greater

cognitive decline compared to day shift nurses. Similarly, Rafael Djajakusli (2022) reported that work stress significantly reduces productivity, especially among workers with poor sleep quality.

Beverly M Hittle (2023) highlighted that sleep education programs can improve sleep among nurses, though more research is needed. According to Rahul K Bagla (2024), shift work disrupts circadian rhythms and leads to physiological strain and reduced performance. Supporting these findings, Kimberley Maharani Maulibulung Hutapea and Dwight Mahaputera Marulitua Hutapea (2025) concluded that irregular shifts contribute to fatigue, stress, metabolic issues, and burnout, while also emphasizing the importance of coping strategies and supportive workplace policies.

### Objectives of the Study

- To evaluate the impact of shift work on employee productivity among nurses in Kerala.
- To analyze the relationship between shiftwork and burnout among nurses at Kerala.

- To suggest ways to improve patient care quality in hospitals through effective shift work management

**Hypothesis**

**Hypothesis 1:** H0: There is no significant association between shift work and nurse fatigue

H1: There is a significant association between shift work and nurse fatigue

**Hypothesis 2:** H0: There is no significant association between shift work and burnout among nurses

H1: There is a significant association between shift work and burnout

**Hypothesis 3:** H0: Shift work does not significantly affect patient care quality

H1: Shift work significantly affects patient care quality

**Research Methodology**

The study uses a descriptive research design to analyze the impact of shift work on nurse productivity. Purposive sampling method was used to select respondents based on their experience and relevance to the study.

**Sample Size**

The study population consists of 500 nurses at various hospitals. Using a standard formula, a sample size of 132 nurses was selected. Purposive sampling was used to choose respondents with relevant shift work experience.

**Source of Data**

Primary data collected through questionnaires from nurses and secondary data collected from journals, articles, and reports

**Research Tools**

Spearman Correlation

Kruskal-Wallis Test

The reliability of the instrument was confirmed with a Cronbach’s Alpha value of 0.853, indicating high consistency.

**Limitation of the Study**

- Some of the respondents were very busy to cooperating with the research.
- The details given by the respondents may not be accurate.
- The study is conducted for a limited period.
- The study is not generalized to all.

**Data Analysis and Interpretation**

**Table 1:** Age factor of the respondents

Age	Frequency	Percentage
Below 25	30	22.7
25-34	75	56.8
35-44	20	15.2
45-54	4	3.0
55+	3	2.3
Total	132	100%

A majority of respondents (56.8%) belong to the 25–34 age group, indicating a young workforce.

**Table 2:** Gender of the respondents

Gender	Frequency	Percentage
Female	97	73.5
Male	35	26.5
Total	132	100

Female nurses constitute 73.5% of the sample.

**Table 3:** Years of nursing Experience

Years of nursing experience	Frequency	Percentage
Less than 1	27	20.7
1-5	59	44.7
6-10	35	26.5
11-15	8	6.1
More than 15	3	2.3
Total	132	100

Most nurses (44.7%) have 1–5 years of experience

**Hypothesis 1**

Shift Work and Fatigue

**Table 4:** Shows the Spearman correlation analysis between Shift work and Nurse Fatigue

Correlations				
			Shift work pattern	Nurse fatigue
Spearman's rho	Shift work pattern	Correlation Coefficient	1.000	.585**
		Sig. (2-tailed)	.	.000
		N	132	132
	Nurse fatigue	Correlation Coefficient	.585**	1.000
		Sig. (2-tailed)	.000	.
		N	132	132

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Interpretation**

The Spearman correlation analysis reveals a moderate to strong positive relationship between shift work patterns and nurse fatigue ( $r = 0.585$ ). This indicates that as shift work becomes more irregular or demanding, the level of fatigue among nurse’s increases correspondingly. The significance value ( $p < 0.01$ ) shows that this relationship is statistically significant and not due to chance. Therefore, there is sufficient evidence to reject the null hypothesis and accept the alternative hypothesis, confirming that shift work has a meaningful impact on nurse fatigue.

**Hypothesis 2**

Shift Work and Burnout

**Table 5:** Shows the Spearman correlation analysis between Shift work and Burnout

Correlations				
			Shift work pattern	Burnout syndrome
Spearman's rho	Shift work pattern	Correlation Coefficient	1.000	.157
		Sig. (2-tailed)	.	.073
		N	132	132
	Burnout syndrome	Correlation Coefficient	.157	1.000
		Sig. (2-tailed)	.073	.
		N	132	132

**Interpretation**

The Spearman correlation analysis shows a weak positive relationship between shift work pattern and burnout syndrome ( $r = 0.157$ ,  $p = 0.073$ ). This indicates that there is only a slight increase in burnout with changes in shift work, but the relationship is very weak. Since the p-value (0.073) is greater

than 0.05, the result is not statistically significant, meaning the relationship may have occurred by chance. Therefore, the null hypothesis is accepted and the alternative hypothesis is rejected, indicating that shift work does not have a significant impact on burnout among nurses.

### Hypothesis 3

#### Shift Work and Patient Care Quality

**Table 6:** Shows the Kruskal Wallis analysis between Shift work and Patient Care Quality

Test Statistics <sup>a,b</sup>		
	Shift work	Patient care quality
Kruskal-Wallis H	12.332	14.048
Df	4	4
Asymp. Sig.	.015	.007
a. Kruskal Wallis Test		
b. Grouping Variable: Age:		

### Interpretation

The Kruskal-Wallis test shows a statistically significant effect of shift work on patient care quality, as the p-values for shift work ( $p = 0.015$ ) and patient care quality ( $p = 0.007$ ) are less than 0.05. This indicates that differences in shift work patterns lead to variations in the quality of patient care across groups. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, confirming that shift work has a significant impact on patient care quality.

### Findings

- Majority of nurses (56.8%) are in the age group of 25–34 years, indicating a young workforce.
- Female nurses constitute 73.5% of respondents, showing gender predominance in nursing.
- Most nurses (44.7%) have 1–5 years of experience, indicating an early-career workforce.
- The study finds that shift work significantly contributes to increased fatigue among nurses, showing that irregular and demanding shift patterns affect their physical and mental well-being. Therefore, implementing better shift scheduling and providing adequate rest periods can help reduce fatigue and improve overall health.
- Shift work does not have a significant impact on burnout among nurses, indicating other factors influence it more. Providing better support and stress management programs can help reduce burnout.
- Shift work significantly affects patient care quality among nurses. Improving shift scheduling and ensuring adequate rest can help maintain high standards of patient care.

### Suggestions

- Implementing forward-rotating shifts (morning to evening to night) helps align work schedules with the body's natural rhythm, making it easier for nurses to adjust. This reduces sleep problems, fatigue, and long-term health issues.
- Providing at least 11–12 hours of rest between shifts gives nurses enough time to recover physically and mentally, improving alertness and reducing mistakes. The current gap of around 8 hours should be increased to 11–12 hours to ensure proper rest and reduce fatigue.
- Limiting consecutive night shifts helps prevent excessive tiredness and burnout. It also improves concentration and ensures better performance during duty hours.

- Offering fatigue management and sleep hygiene training equips nurses with techniques to manage stress, improve sleep quality, and maintain energy levels. This helps them handle irregular work schedules more effectively.
- Ensuring adequate staffing levels reduces workload pressure on individual nurses. It allows them to perform tasks efficiently and improves both job satisfaction and patient care quality.
- Providing mental health support and counseling services helps nurses deal with emotional stress and workplace challenges. This promotes psychological well-being and reduces the risk of anxiety and depression.
- Conducting regular health check-ups helps in early identification of health problems related to shift work. This ensures timely treatment and promotes long-term health and safety.
- Introducing flexible shift options enables nurses to balance their personal and professional lives better. This increases job satisfaction and helps in retaining experienced staff.
- Using technology to reduce manual workload and documentation saves time and effort. It minimizes errors and allows nurses to focus more on patient care.
- Improving workplace ergonomics and lighting, especially during night shifts, reduces physical strain and enhances visibility. This helps maintain alertness and prevents fatigue-related errors.
- Recognizing and rewarding employee performance boosts motivation and morale. It creates a positive work environment and encourages nurses to perform at their best.

### Conclusion

The study concludes that shift work has a significant impact on nurse productivity and well-being. Fatigue is the major factor affecting performance, while burnout is influenced by multiple factors beyond shift schedules. Despite these challenges, nurses maintain a high level of patient care due to strong teamwork and coping strategies.

To improve productivity and healthcare quality, hospitals should focus on proper shift scheduling, adequate rest periods, and employee wellness programs. Effective management of shift work can enhance nurse satisfaction and ensure better patient outcomes.

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