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A study to assess the relationship between nurse staffing levels and patient outcomes among admitted patients in Sanskar Hospital, Dewas

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Abstract

Background: Adequate nurse staffing is a crucial determinant of quality patient care and favorable health outcomes. Inadequate staffing may increase adverse events, prolong hospital stay, and reduce patient satisfaction. Understanding the relationship between nurse staffing levels and patient outcomes is important for improving quality care.

Objectives: To determine the relationship between nurse staffing levels and patient outcomes.

Methodology: A quantitative descriptive correlational research design was adopted. The study was conducted in Sanskar Hospital of dewas among 40 admitted patients selected through purposive sampling technique. Data were collected using demographic proforma, structured nurse staffing assessment checklist and patient outcome assessment scale. Data were analyzed using descriptive and inferential statistics.

Results: Majority 17 (42.5%) patients were aged 31–45 years, 22 (55%) were male, 18 (45%) had secondary education, and 16 (40%) had hospital stay of 4–7 days. Mean nurse staffing score was 18.4±3.2 and mean patient outcome score was 24.8±4.1. Pearson correlation coefficient showed significant positive relationship between nurse staffing level and patient outcomes ($r=0.72$, $p<0.05$). Chi-square revealed significant association of patient outcomes with length of hospital stay and age.

Conclusion: The study concluded that adequate nurse staffing significantly improves patient outcomes among admitted patients.

Keywords: Nurse staffing, patient outcomes, hospitalized patients, nurse-patient ratio, quality care

Introduction

Nursing services form the backbone of healthcare delivery systems. Adequate nurse staffing is essential for maintaining patient safety, preventing complications, and ensuring positive patient outcomes. Nurse staffing levels refer to the number of nursing personnel available to provide care to patients in relation to patient load. Patient outcomes are indicators reflecting effectiveness of care and include recovery rate, patient satisfaction, complications, medication errors, infection rates, and length of stay. In modern healthcare settings, understaffing remains a significant challenge affecting quality care. Increased workload due to inadequate staffing can lead to fatigue, missed nursing care, delayed interventions and adverse patient outcomes. Therefore, the investigator felt the need to assess the relationship between nurse staffing levels and patient outcomes.

Problem Statement

A study to assess the relationship between nurse staffing levels and patient outcomes among admitted patients in Sanskar Hospital, Dewas.

Objectives

1. To assess nurse staffing levels in Sanskar Hospital.
2. To assess patient outcomes among admitted patients.
3. To determine relationship between nurse staffing levels and patient outcomes.
4. To associate patient outcomes with selected demographic variables.

Research Hypothesis

H1: There will be significant relationship between nurse staffing levels and patient outcomes.

H2: There will be significant association between patient outcomes and selected demographic variables.

Assumptions

- Adequate nurse staffing influences patient outcomes.
- Better staffing improves quality of nursing care.

Delimitations

- Study limited to Sanskar Hospital of Dewas.
- Sample limited to 40 admitted patients.
- Study duration limited to one month.

Methodology

The present study adopted a quantitative descriptive correlational research design to assess the relationship between nurse staffing levels and patient outcomes among admitted patients in Sanskar Hospital of Dewas. The study was conducted in Sanskar Hospital of Dewas, Madhya Pradesh, where patients admitted in medical and surgical wards constituted the accessible population. The target population comprised all admitted adult patients receiving inpatient care in Sanskar Hospital, while the sample consisted of 40 admitted patients who met the inclusion criteria. Patients who were conscious, willing to participate, able to communicate, and admitted for at least three days were included in the study. Critically ill patients and those

unable to respond were excluded. Purposive sampling technique was used to select the samples based on predetermined criteria relevant to the objectives of the study. Data collection was carried out after obtaining formal administrative permission from hospital authorities and informed consent from participants. A structured interview schedule was used to collect data from patients. The research instrument consisted of three sections. Section A included demographic variables such as age, gender, education, and length of hospital stay. Section B consisted of a structured nurse staffing assessment checklist developed by the investigator to assess adequacy of staffing as perceived through indicators such as nurse availability, promptness of care, response to patient needs, medication administration, and continuity of care. Section C included a patient outcome assessment scale to measure outcomes related to patient satisfaction, recovery status, occurrence of complications, safety indicators, and quality of nursing care. The tool was validated by experts in medical-surgical nursing, nursing research, and hospital administration to ensure content validity. Reliability of the instrument was established through split-half method, and the reliability coefficient was found to be r = 0.82, indicating the tool was reliable for the study. Data collection was conducted over a period of four weeks. Each participant was interviewed individually and responses were recorded systematically. The collected data were coded, tabulated, and analyzed using descriptive and inferential statistics. Frequency, percentage, mean and standard deviation were used to describe demographic variables, nurse staffing levels and patient outcomes. Pearson's correlation coefficient was used to determine the relationship between nurse staffing levels and patient outcomes, while Chi-square test was used to find association between patient outcomes and selected demographic variables. The level of significance was set at $p < 0.05$. Ethical principles were maintained throughout the study. Confidentiality and anonymity of participants were assured, informed consent was obtained, and participants were informed that their involvement was voluntary with the freedom to withdraw at any time. Thus, the methodology was designed systematically to ensure scientific rigor and fulfillment of the study objectives.

Data Analysis and Interpretation

Section I: Demographic Variables (N=40)

Table 1: Frequency and Percentage Distribution of Patients According to Age

Age (Years)	Frequency	Percentage
18-30	10	25%
31-45	17	42.5%
46-60	9	22.5%
Above 60	4	10%

Interpretation: The table shows majority 17 (42.5%) patients were in age group 31-45 years, 10 (25%) were 18-30 years, 9 (22.5%) were 46-60 years and 4 (10%) were above 60 years.

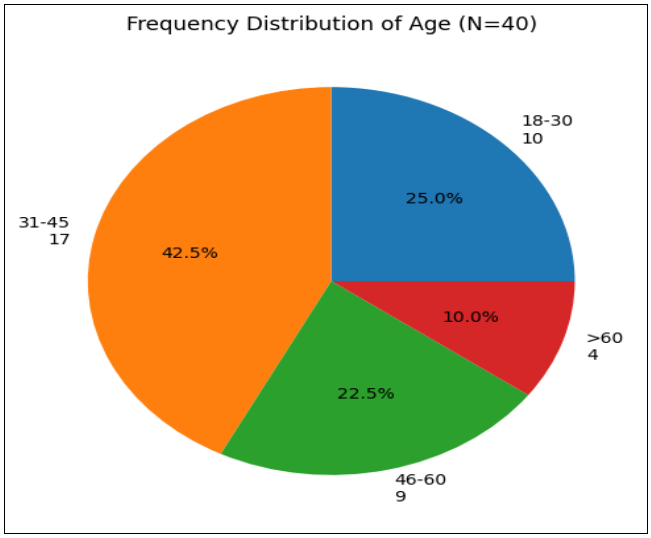

Fig 1: Pie diagram of Frequency and Percentage Distribution of Patients According to Age

Table 2: Distribution According to Gender

Gender	Frequency	Percentage
Male	22	55%
Female	18	45%

Interpretation: Majority 22 (55%) were males and 18 (45%) were females.

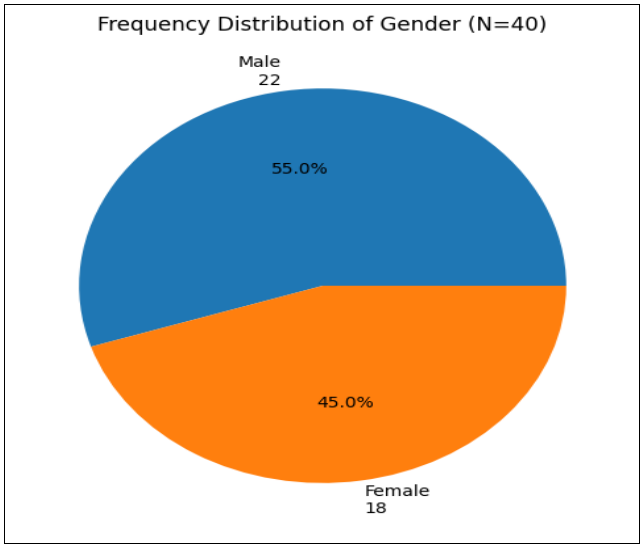

Fig 2: Pie diagram of Frequency and Percentage Distribution of Patients According to gender

Table 3: Distribution According to Education

Education	Frequency	Percentage
Primary	10	25%
Secondary	18	45%
Graduate	9	22.5%
Postgraduate	3	7.5%

Interpretation: Regarding educational qualification, the majority 18 (45%) patients had secondary education, followed by 10 (25%) with primary education, 9 (22.5%) were graduates, and only 3 (7.5%) were postgraduates. This finding indicates that most participants had education up to the secondary level.

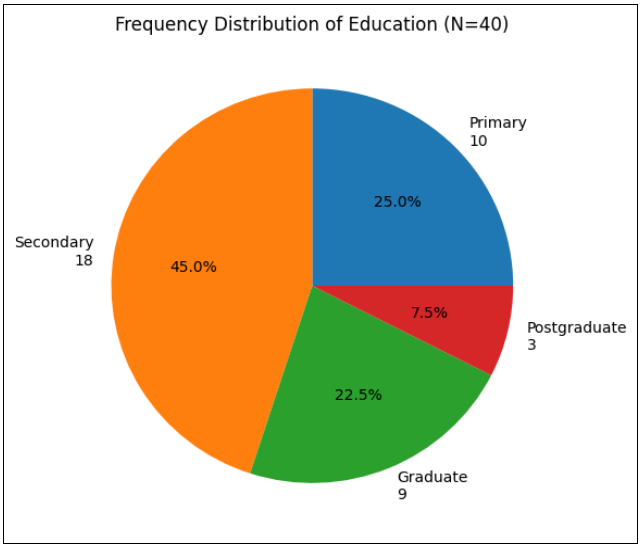

Fig 3: Pie diagram of Frequency and Percentage Distribution of Patients According to education

Table 4: Distribution According to Length of Hospital Stay

Days	Frequency	Percentage
1-3 Days	11	27.5%
4-7 Days	16	40%
8-10 Days	9	22.5%
Above 10	4	10%

Interpretation: According to duration of hospital stay, the majority 16 (40%) patients had a hospital stay of 4–7 days, followed by 11 (27.5%) patients with 1–3 days stay, 9 (22.5%) had 8–10 days stay, and 4 (10%) patients had a stay of more than 10 days. This indicates that most participants had moderate duration of hospitalization.

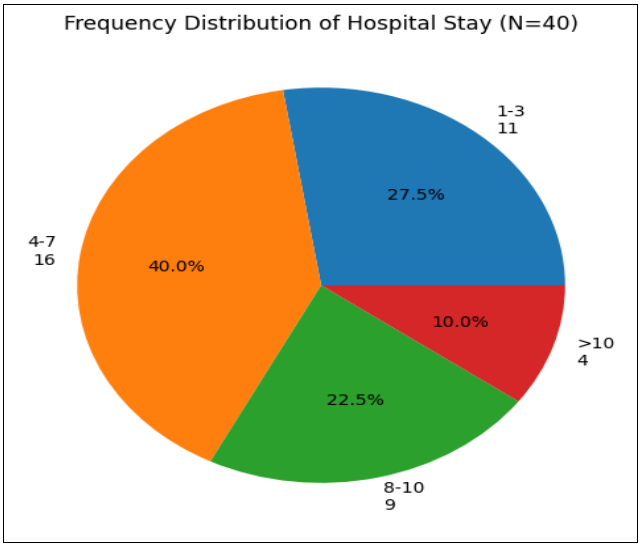

Fig 4: Pie diagram of Frequency and Percentage Distribution of Patients According to length of hospital stay

Section II Assessment of Nurse Staffing Levels

Table 5: Nurse Staffing Levels

Staffing Level	Frequency	Percentage
Poor	5	12.5%
Moderate	13	32.5%
Adequate	22	55%

Mean=18.4 SD=3.2

Interpretation: The table shows that the majority 22 (55%) of patients perceived adequate nurse staffing levels, 13 (32.5%) perceived moderate staffing, whereas only 5 (12.5%) reported poor staffing levels. The mean nurse staffing score was 18.4 with a standard deviation of 3.2, indicating overall adequate staffing in the Sanskar Hospital. This finding suggests that most participants experienced satisfactory nurse availability and support during hospitalization.

Section III Assessment of Patient Outcomes

Table 6: Patient Outcome Levels

Outcome Level	Frequency	Percentage
Poor	4	10%
Moderate	12	30%
Good	24	60%

Mean=24.8 SD=4.1

Interpretation: The table depicts that majority 24 (60%) of patients had good patient outcomes, 12 (30%) had moderate outcomes, and only 4 (10%) experienced poor outcomes. The mean patient outcome score was 24.8 with standard deviation 4.1, indicating favorable patient outcomes among most admitted patients. This suggests that majority of patients experienced satisfactory recovery, fewer complications, and positive care outcomes.

Section IV Relationship between Nurse Staffing and Patient Outcomes

Table 7: Correlation between Nurse Staffing Levels and Patient Outcomes

Variables	Mean	SD	r value
Nurse Staffing	18.4	3.2	
Patient Outcomes	24.8	4.1	0.72*

*Significant at $p<0.05$

Interpretation: The table reveals that the mean score of nurse staffing levels was 18.4 ± 3.2 and mean patient outcome score was 24.8 ± 4.1. The calculated Pearson correlation coefficient (r = 0.72) showed a strong positive correlation between nurse staffing levels and patient outcomes, which was statistically significant at $p < 0.05$.\n\nThis finding indicates that as nurse staffing levels improve, patient outcomes also improve. Adequate staffing contributes to timely care, reduced complications, improved recovery, and better patient satisfaction. Hence, the research hypothesis H_1 was accepted, showing significant relationship between nurse staffing levels and patient outcomes.

Section V Association between Patient Outcomes and Demographic Variables

Table 8: Chi-square Association

Variable	Chi-square	Table Value	Significance
Age	8.21	7.81	Significant
Gender	1.90	3.84	Not Significant
Education	3.54	7.81	Not Significant
Hospital Stay	9.45	7.81	Significant

Interpretation: Age and hospital stay showed significant association with patient outcomes.

Discussion

The present study found majority patients perceived adequate nurse staffing and good patient outcomes. Positive significant correlation (r=0.72) indicated that better nurse staffing leads to improved patient outcomes. This finding is supported by previous studies showing lower mortality, fewer infections and improved satisfaction with better staffing. Patients in adequately staffed units showed reduced complications, timely medication administration and better recovery. Significant association with age and hospital stay suggests these variables influence outcomes.

Limitations

1. 40 sample size.
2. Limited to Sanskar Hospital.
3. Short duration.
4. Findings cannot be generalized widely.

Recommendations

1. Similar study can be conducted on larger sample.
2. Comparative studies may be conducted in government and private hospitals.
3. Experimental studies can assess staffing interventions.
4. Similar studies may be done among nurses and administrators.

Conclusion

The study concluded that nurse staffing levels have significant positive relationship with patient outcomes. Adequate nurse staffing improves patient safety, recovery and satisfaction. Appropriate staffing policies should be strengthened to enhance healthcare quality.

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