



EVALUATION OF NURSING WORKLOAD AND ITS IMPACT ON QUALITY OF PATIENT CARE IN AN ADULT ICU OF A RURAL TERTIARY CARE TEACHING HOSPITAL

Saritha

PGDHHM Student, School of Public Health and Social Medicine, Pravara Institute of Medical Sciences – Deemed University, Loni, Maharashtra, India

Under the guidance of Dr. Yashwant M. Palghadmal, Assistant Professor, School of Public Health and Social Medicine, PIMS-DU, Loni

Co-guidance: Dr. Akshaya Shetti,

Prof. HOD, Department of Anaesthesiology, PIMS-DU, Loni

Abstract :

Background: Nursing workload is an important determinant of patient safety and quality of care, particularly in intensive care settings where patients require continuous monitoring and complex interventions. Objectives: To assess nursing workload using the Nursing Activities Score (NAS), assess perceived quality of patient care using the Practice Environment Scale of the Nursing Work Index (PES-NWI), and determine the association between nursing workload and quality of patient care. Methods: A quantitative analytical cross-sectional study was conducted among 75 eligible nursing staff working in the selected ICU of a rural tertiary care teaching hospital at Loni. Purposive selection was used for the ICU and total population sampling was used for eligible nurses. Data were collected using NAS and PES-NWI, together with selected hospital quality indicators. Data were analyzed using Microsoft Excel and R statistical software; descriptive statistics and Spearman rank correlation were applied. Results: The mean NAS score was 22.43 ± 0.99 , with a median of 23 (IQR 22–23) and a range of 18–23. The mean PES-NWI-related quality score was 18.51 ± 5.34 , with a median of 17 (IQR 14–22) and a range of 10–33. A statistically significant negative association was observed between nursing workload and perceived quality of patient care (Spearman $\rho = -0.327$, $p = 0.004$). Conclusion: Higher nursing workload was associated with lower perceived quality of patient care in the study setting. Workload assessment and staffing decisions should consider patient-care intensity and nursing activity requirements.

Keywords :

Nursing workload; Nursing Activities Score; NAS; Practice Environment Scale of the Nursing Work Index; PES-NWI; patient care quality; intensive care unit; nurse staffing; rural tertiary care hospital.

I. INTRODUCTION

Nurses provide continuous patient care through monitoring, medication administration, procedures, documentation, communication, education, emotional support, and coordination with other healthcare professionals. In intensive care units, these responsibilities are intensified because critically ill patients often require continuous observation and complex therapeutic interventions. Consequently, nursing workload is a central concern for patient safety, quality improvement, and workforce planning.

Nursing workload refers to the amount and complexity of nursing activity required to provide care. It includes direct activities such as monitoring, medication administration, hygiene care, mobilization and procedures, as well as indirect activities such as documentation, communication, coordination and administrative work. Traditional nurse-to-patient ratios do not always capture differences in patient acuity and care intensity. Validated workload instruments can provide a more activity-sensitive assessment.

The Nursing Activities Score (NAS) was developed to quantify nursing workload by measuring the proportion of nursing time required for defined nursing activities. The Practice Environment Scale of the Nursing Work Index (PES-NWI) is widely used to assess characteristics of the nursing practice environment, including staffing adequacy, leadership support, nurse participation, professional relationships and foundations for quality care.

Evidence from previous research indicates that staffing levels and workload are related to missed nursing care, patient safety and other patient outcomes. However, local evidence from rural tertiary care teaching hospitals in India remains limited. The present study therefore examined nursing workload and its association with perceived quality of patient care among nursing staff working in an adult ICU of a rural tertiary care teaching hospital in Loni.

II. AIM AND OBJECTIVES

Aim: To quantitatively evaluate nursing workload in an adult ICU of a rural tertiary care teaching hospital at Loni and determine its association with perceived quality of patient care.

1. To assess nursing workload using a validated workload instrument.

2. To assess perceived quality of patient care using a standardized questionnaire.
3. To determine the association between nursing workload and perceived quality of patient care.

III. MATERIALS AND METHODS

Study design and setting: A quantitative analytical cross-sectional study was conducted in the Intensive Care Unit of Rural Tertiary Care Teaching Hospital, Loni, Rahata Taluka, Ahilyanagar district, Maharashtra, India.

Study population and sample: The study included 75 eligible nursing staff (ANM, GNM and B.Sc. Nursing) working in the selected ICU. Purposive selection was used for the ICU and total population sampling was used for eligible nurses.

Inclusion criteria: Nurses who had worked for more than six months in the hospital and were present during the data-collection shifts were eligible. Nurses on leave for more than two weeks, nurses with less than six months of hospital experience, and those unwilling to participate were excluded.

Data collection tools: Nursing workload was assessed using the 23-item Nursing Activities Score (NAS). Perceived quality of patient care and nursing practice environment were assessed using a 31-item PES-NWI-based questionnaire on a four-point Likert scale. Selected ward-level quality indicators were also extracted retrospectively from hospital records.

Validity and ethics: The data collection tools were reviewed by experts in Hospital Administration, Nursing and Public Health. Institutional Review Committee approval was obtained under letter No. PIMS/SPHSM/IRC/2026/449/26 dated 18/11/2025. Written informed consent was obtained from participants and confidentiality was maintained.

Data analysis: Data were entered, cleaned and analyzed using Microsoft Excel and R statistical software. Descriptive statistics included frequency, percentage, mean and standard deviation. Spearman rank correlation was used to assess the association between NAS and PES-related scores. Statistical significance was considered at $p < 0.05$.

IV. RESULTS

A total of 75 nursing staff participated in the study. The mean age was 32.1 ± 5.8 years. Mean total work experience was 7.0 ± 4.2 years and mean hospital experience was 6.5 ± 4.0 years. Most participants were working the morning shift (60%), followed by night (24%) and evening (16%) shifts. The average patient load was 5.2 ± 6.3 patients.

Table 1. Summary of nursing workload and perceived quality scores (N = 75)

Variable	Mean $\pm$ SD	Median (IQR)	Minimum	Maximum
NAS Total Score	22.43 ± 0.99	23 (22–23)	18	23
PES Total Score	18.51 ± 5.34	17 (14–22)	10	33

The mean NAS score was 22.43 ± 0.99 , with a narrow spread of scores, indicating consistently high nursing activity requirements in the study setting. The mean PES-related quality score was 18.51 ± 5.34 , indicating moderate perceived quality with greater variability among participants.

Table 2. Association between nursing workload and perceived quality of patient care (N = 75)

Variables	Spearman ρ	p-value	Interpretation
NAS Total Score vs PES Total Score	-0.327	0.004	Statistically significant negative association

Spearman rank correlation demonstrated a statistically significant negative association between nursing workload and perceived quality of patient care ($\rho = -0.327$, $p = 0.004$). Thus, higher workload scores were associated with lower perceived quality scores in this study population.

V. DISCUSSION

The study demonstrated that nurses in the selected rural tertiary care teaching hospital experienced a relatively high and consistent workload. The mean NAS score of 22.43 ± 0.99 and median of 23 suggest that nursing activity requirements were substantial and showed limited variation among participants.

The perceived quality-of-care score averaged 18.51 ± 5.34 . The wider variability compared with the workload score suggests that nurses differed in their perceptions of the practice environment and quality of care despite relatively similar workload levels.

The observed negative association between workload and perceived quality of care is consistent with the broader literature indicating that insufficient staffing and excessive workload may contribute to missed care and adverse patient outcomes. The present findings are particularly relevant to ICU settings, where care intensity and the need for continuous monitoring can increase nursing demands.

Because the study was cross-sectional and conducted in a single ICU, the association should not be interpreted as proof of causation. Other organizational, patient-level and environmental factors may also influence perceived quality of care. Nevertheless, the findings provide useful local evidence for workload assessment and staffing discussions.

VI. CONCLUSION

The study found a relatively high nursing workload and moderate perceived quality of patient care among 75 nursing staff in a rural tertiary care teaching hospital ICU. A statistically significant negative association was observed between nursing workload and perceived quality of patient care ($\rho = -0.327$, $p = 0.004$). Regular workload assessment, appropriate allocation of nursing staff according to patient-care requirements, and monitoring of quality indicators may support quality improvement. Further multicentre and longitudinal studies are recommended to examine causal pathways and evaluate workload-based staffing models.

VII. LIMITATIONS

1. The study was conducted in a single ICU of one rural tertiary care teaching hospital, limiting generalizability.
2. The cross-sectional design does not establish a causal relationship between workload and quality of care.
3. Perceived quality was assessed using a questionnaire and may be influenced by individual perceptions.
4. Some hospital quality indicators were obtained retrospectively from available records.

VIII. ACKNOWLEDGEMENT

The author expresses sincere gratitude to the faculty and administration of the School of Public Health and Social Medicine, Pravara Institute of Medical Sciences – Deemed University, Loni, the Institutional Review Committee, the nursing administration and all nursing staff who participated in the study. The author also acknowledges the guidance and support of Dr. Yashwant M. Palghadmal and Dr. Akshaya Shetti.

IX. REFERENCES

- [1] Aiken LH, Clarke SP, Sloane DM, Sochalski J, Silber JH. Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA*. 2002;288(16):1987-1993.
- [2] Dall'Ora C, Griffiths P, Ball J, Simon M, Aiken LH. Nurse staffing levels and patient outcomes: a systematic review of longitudinal studies. *Int J Nurs Stud*. 2022;126:104154.
- [3] Griffiths P, Ball J, Drennan J, et al. Nurse staffing levels, missed care and patient outcomes: a review of the evidence. *Int J Nurs Stud*. 2016;63:112-129.
- [4] Miranda DR, Nap R, de Rijk A, Schaufeli W, Iapichino G. Nursing activities score. *Crit Care Med*. 2003;31(2):374-382.
- [5] Armstrong E, et al. Using Nursing Activities Score to assess nursing workload. *Intensive Crit Care Nurs*. 2015.
- [6] Lake ET. Development of the Practice Environment Scale of the Nursing Work Index. *Res Nurs Health*. 2002;25(3):176-188.
- [7] Ball JE, Murrells T, Rafferty AM, Morrow E, Griffiths P. Care left undone during nursing shifts: associations with workload and perceived quality of care. *BMJ Qual Saf*. 2014;23(2):116-125.
- [8] Needleman J, Buerhaus P, Mattke S, Stewart M, Zelevinsky K. Nurse-staffing levels and the quality of care in hospitals. *N Engl J Med*. 2002;346(22):1715-1722.
- [9] Kane RL, Shamliyan TA, Mueller C, Duval S, Wilt TJ. The association of registered nurse staffing levels and patient outcomes: systematic review and meta-analysis. *Med Care*. 2007;45(12):1195-1204.
- [10] Rafferty AM, Clarke SP, Coles J, Ball J, James P, McKee M, et al. Outcomes of variation in hospital nurse staffing in English hospitals. *Int J Nurs Stud*. 2007;44(2):175-182.
- [11] Cho SH, Ketefian S, Barkauskas VH, Smith DG. The effects of nurse staffing on adverse events, morbidity, mortality, and medical costs. *Nurs Res*. 2003;52(2):71-79.
- [12] Kalisch BJ, Landstrom GL, Hinshaw AS. Missed nursing care: a concept analysis. *J Adv Nurs*. 2009;65(7):1509-1517.
- [13] McHugh MD, Kutney-Lee A, Cimiotti JP, Sloane DM, Aiken LH. Nurses' widespread job dissatisfaction, burnout, and frustration with health benefits signal problems for patient care. *Health Aff*. 2011;30(2):202-210.

