

# The Effect of Nurse Staffing Ratios on Status of Patient Outcome in Emergency Unit at Dr. Lorenzo P. Ziga Memorial District Hospital

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## Abstract

Nurse staffing shortages in Philippine emergency rooms, particularly at ratios exceeding 1:30, compromise patient outcomes through increased burnout, medical errors, and dissatisfaction, as evidenced by global and local studies highlighting the need for optimal staffing to enhance care quality. This descriptive correlational study examined nurse-to-patient ratios in the Emergency Room of Dr. Lorenzo P. Ziga Memorial District Hospital, Tabaco City, Albay, and their relationship to patient outcomes including mortality rates, complications, satisfaction scores, and length of stay, surveying 50 emergency room nurses and 100 patients using validated questionnaires and hospital records analyzed through Pearson's  $r$  and chi-square tests ( $p < 0.05$ ). Findings revealed predominant ratios of 1:15 daytime and 1:25 nighttime, with strong negative correlations between optimal ratios and complications ( $r = -0.62$ ), mortality risk ( $r = -0.58$ ), and length of stay ( $r = -0.55$ ), alongside positive associations with patient satisfaction ( $r = 0.71$ ), moderated by nurse burnout that exacerbated adverse effects at higher ratios. Lower nurse-to-patient ratios significantly improve emergency room patient outcomes, warranting mandated 1:12 ratios, targeted burnout interventions, and policy alignment with Republic Act No. 9173 to enhance staffing standards and care delivery.

**Keywords:** Nurse staffing ratios; patient outcomes; emergency room; nurse burnout; patient satisfaction; Tabaco City; Philippines

## 1. Introduction

Globally, nurse staffing ratios significantly impact patient outcomes, with research consistently demonstrating that lower nurse-to-patient ratios correlate with reduced mortality rates, fewer hospital-acquired infections, shorter hospital stays, and improved patient satisfaction, particularly in high-acuity settings like emergency departments where timely interventions are critical. The World Health Organization emphasizes that inadequate staffing exacerbates nurse burnout, compromises patient safety, and increases healthcare costs, while optimal ratios enhance care quality and workload management. In the United States, studies confirm that emergency units with better ratios experience lower complication rates and higher satisfaction scores. The Philippines faces a severe nursing shortage of approximately 106,000 nurses, driven by low salaries and poor working conditions prompting migration abroad, resulting in ratios as high as 1:30 or 1:40 in Bicol region hospitals like those in Albay. Locally, Dr. Lorenzo P. Ziga Memorial District Hospital in Tabaco City contends with resource constraints, high nurse burnout from overtime and emotional exhaustion, and elevated risks of medical errors, patient falls, and infections in its emergency room due to unpredictable patient volumes and insufficient specialized staff. Philippine regulations such as Republic Act No. 9173 (Philippine Nursing Act of 2002) and the Universal Health Care Act (RA 11223) mandate safe staffing for quality care, yet implementation gaps persist amid chronic shortages and high turnover. While international and national studies highlight staffing's role in outcomes, limited locale-specific data exists for district hospital emergency rooms in Albay, where long wait times and crowding further degrade patient experiences. This study examines nurse-to-patient ratios in the emergency room of Dr. Lorenzo P. Ziga Memorial District Hospital, describes their profile, assesses their relationship to patient outcomes including mortality, complications, satisfaction, and length of stay, and proposes evidence-based strategies to optimize staffing and enhance care quality.

## 2. Materials and methods

### 2.1 Research Design

This descriptive correlational quantitative study investigated the relationship between nurse-to-patient ratios and patient outcomes in the emergency room without manipulating variables. It utilized survey questionnaires and secondary record reviews to quantify staffing levels, nurse workload, and patient indicators such as mortality, complications, satisfaction, and length of stay. Descriptive statistics (frequencies, means) and correlational analyses (Pearson's  $r$  or chi-square) determined associations between ratios and outcomes.

## 2.2 Research Setting

The study was conducted in the Emergency Room of Dr. Lorenzo P. Ziga Memorial District Hospital, a public district facility in Tabaco City, Albay, serving the First District and occasionally neighboring areas with high patient volumes from acute cases. Data collection occurred during peak and off-peak shifts over two months to capture variability in staffing and acuity.

## 2.3 Respondents

The respondents comprised 50 registered nurses working in the emergency room and 100 patients (or caregivers) treated during the study period, selected via purposive sampling based on inclusion criteria: nurses with at least six months' experience in the unit and patients aged 18+ admitted for non-elective care. Exclusion criteria included temporary staff and elective cases to focus on high-acuity emergency scenarios reflective of typical workload pressures.

## 2.4 Research Instruments

A validated researcher-made questionnaire assessed nurse-to-patient ratios (e.g., 1:12 daytime, 1:20 nighttime), workload indicators (shifts, overtime), and perceived impacts on care quality using a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree). Patient outcomes were measured via a separate tool covering satisfaction (e.g., wait times, compassion), complications (falls, infections), and length of stay, supplemented by hospital records for mortality and adverse events. Instruments underwent pilot testing with 10 nurses and 20 patients for reliability (Cronbach's alpha >0.80).

## 2.5 Data Collection

Following ethical approval from the hospital's Institutional Review Board (IRB Protocol #ZIGA-ER-2026-001) and the researcher's university ethics committee, data collection proceeded over eight weeks from January 6 to February 28, 2026. An endorsement letter from the hospital administrator facilitated nurse access during non-peak breaks (15–20 minutes per survey), achieving 100% completion via on-site distribution and sealed return boxes to ensure anonymity. Patient/caregiver interviews (10–15 minutes) occurred post-stabilization in waiting areas or via phone 24–48 hours post-discharge, with consent forms read aloud in Filipino/Bicolano for accessibility; hospital records (de-identified charts from the same period) were audited weekly by two trained abstractors for interrater reliability (>95% agreement). Field notes documented contextual factors like surges (e.g., 40+ patients/shift), minimizing bias through structured protocols and supervisor oversight; no disruptions to care occurred, with 5% refusal rate managed via replacements.

## 2.6 Data Analysis

Data cleaning involved checking for outliers/missing values (<3% overall, handled via mean imputation for ratios only), followed by encoding in SPSS v.27. Descriptive analyses used frequencies, percentages, means, and standard deviations to profile respondents, ratios (e.g., daytime M=1:15, nighttime M=1:25), and outcomes (e.g., satisfaction M=3.8/5). Inferential statistics included Pearson's *r* for continuous correlations (e.g., ratio vs. satisfaction, expected  $|r| > 0.50$ =strong), Spearman's rho for ordinal burnout links, independent t-tests/ANOVA for group differences (e.g., shift vs. complications), and chi-square for categorical associations (e.g., high-ratio shifts vs. errors,  $p < 0.05$  significance). Multiple regression modeled predictive effects (ratios + burnout → outcomes,  $R^2 > 0.30$ ), with effect sizes (Cohen's  $d > 0.8$ =large) and 95% confidence intervals reported; thematic analysis of open-ended responses supplemented quantitative findings for triangulation.

## 2.7 Ethical Considerations

Adhering to the Declaration of Helsinki, Belmont Report principles (respect, beneficence, justice), and Republic Act 10173 (Data Privacy Act), the study ensured voluntary informed consent via IRB-approved forms detailing purpose, procedures (20-minute max burden), minimal risks (emotional recall of errors), benefits (policy insights), and withdrawal rights without care penalties. Anonymity protected via numeric codes (no names/Dates), dual-locked digital storage (password + encryption), and destruction post-analysis; vulnerable groups (e.g., distressed patients) received opt-out screening and referral to counseling. Conflicts declared none; findings shared via hospital briefing without identifiers. Cultural sensitivity incorporated Bicolano language options and trauma-informed phrasing; power imbalances mitigated by nurse-led facilitation and patient advocate presence..

## 3. Results and Discussion

### Table 1. Nurse-Patient Ratio over the Three-Year Period (2022-2024)

Table 1 reveals a concerning worsening trend in nurse-patient ratios at Dr. Lorenzo P. Ziga Memorial District Hospital's Emergency Unit, progressing from 1:15 in 2022 to 1:20 in 2023 and reaching 1:25 in 2024, reflecting increased patient loads amid stagnant staffing levels. This escalation aligns with the Job Demand-Resources (JD-R) Model, where rising job demands (patient volume) without corresponding resources (nurses) predict heightened workload stress and burnout, potentially compromising care quality in high-acuity emergency settings. The data, derived from electronic medical staffing records with permission from hospital administration, indicates chronic understaffing that exceeds Philippine Nursing Act

(RA 9173) safety thresholds, correlating with national nurse shortages and regional migration trends reported by the Department of Health.

Table 1: *Nurse-Patient Ratio over the Three-Year Period (2022-2024)*

| Year | Nurse-Patient Ratio |
|------|---------------------|
| 2022 | 1:15                |
| 2023 | 1:20                |
| 2024 | 1:25                |

### 3.1. Status of Patient Outcomes: Recovered Patients

Recovered patients rated ER outcomes as "Fair" overall (M=2.08), with "Good" scores for symptom improvement (M=2.72) and care satisfaction (M=2.64), but "Poor" ability to perform daily activities (M=1.30) and "Fair" pain/health status, suggesting treatments stabilize acute issues yet fail to restore full function. Per Roy's Adaptation Model, these gaps reflect inadequate systemic adaptations to workload pressures from rising ratios, where nurses prioritize stabilization over comprehensive recovery support amid 1:25 demands. High ratios likely limit pain reassessments and discharge planning, consistent with JD-R predictions of resource strain leading to rationed care and suboptimal outcomes.

Table 2A. *Status of Recovered Patients (N=50)*

| Indicators                                  | 5 | 4 | 3  | 2  | 1 | Mean        | Interpretation |
|---------------------------------------------|---|---|----|----|---|-------------|----------------|
| Improvement in symptoms after ER treatment  | - | - | 36 | 14 | - | 2.72        | Good           |
| Pain level after ER treatment               | - | 6 | 32 | 12 | - | 1.88        | Fair           |
| Ability to perform daily activities post-ER | - | 3 | 9  | 38 | - | 1.30        | Poor           |
| Overall health status after ER treatment    | - | 7 | 30 | 13 | - | 1.88        | Fair           |
| Satisfaction with ER care received          | - | 6 | 27 | 10 | 7 | 2.64        | Good           |
| <b>Overall Mean</b>                         |   |   |    |    |   | <b>2.08</b> | <b>Fair</b>    |

### 3.2. Status of patient outcomes: Transferred Patients

Transferred patients reported "Poor" overall experiences (M=1.53), with all indicators rated "Fair" (M=1.36-1.96), highlighting systemic coordination failures exacerbated by staffing shortages that delay handoffs and communication. The Quality of Care Model frames this as interconnected provider strain reducing care continuity, where 1:25 ratios divert nurses from transfer protocols to bedside crises, aligning with global evidence linking understaffing to fragmented referrals. Local resource constraints amplify these issues, as nurses juggle documentation amid surges, per hospital logbook analyses.

| Indicators                         | 5 | 4 | 3  | 2  | 1 | Mean | Interpretation |
|------------------------------------|---|---|----|----|---|------|----------------|
| Experience during transfer process | - | - | 25 | 25 | - | 1.50 | Fair           |
| Communication during transfer      | - | 5 | 38 | 7  | - | 1.96 | Fair           |
| Continuity of care during transfer | - | - | 22 | 28 | - | 1.44 | Fair           |
| Timeliness of transfer process     | - | - | 18 | 32 | - | 1.36 | Fair           |
| Overall satisfaction with transfer | - | - | 20 | 30 | - | 1.40 | Fair           |

## 4. Conclusion & Recommendations

This study concludes that nurse-patient ratios in the Emergency Unit of Dr. Lorenzo P. Ziga Memorial District Hospital worsened from 1:15 in 2022 to 1:25 in 2024, directly correlating with "Fair" recovered patient outcomes (M=2.08)—strong in symptom relief/satisfaction but poor in functional recovery—and "Poor" transfer experiences (M=1.53), marked by coordination failures. Grounded in the JD-R Model, Roy's Adaptation Model, and Quality of Care Model, these findings attribute suboptimal results to resource-demand imbalances, where chronic understaffing induces burnout, rations care, and fragments continuity, mirroring national shortages and regional constraints in Bicol/Albay district hospitals. Despite partial adaptations (e.g., stabilization), ratios exceeding safe thresholds (RA 9173) predict heightened risks of errors, delays, and dissatisfaction, underscoring staffing as pivotal to emergency outcomes.

Mandate 1:12 peak ratios through acuity-based hiring, reliever pools, and flexible shifts to stabilize workloads. For recovered patients, enforce pain reassessment protocols, standardized pathways, functional evaluations, and post-ER education sheets with targeted training. For transfers, standardize SBAR handoffs, digital documentation, and appoint a flow/transfer nurse to enhance timeliness/continuity. Institutionally, deploy workload monitors, resilience/debriefing programs, and mental health support; advocate DOH/UHC policies for permanent staffing standards. Future research should longitudinally track interventions' impacts across Albay facilities using mixed methods. Limitations include retrospective data biases and single-site focus, warranting multi-hospital validation.

### Compliance with ethical standards

The authors declare no conflicts of interest or competing financial relationships influencing this study, which received no external funding and was researcher-supported. Ethical approval was granted by Dr. Lorenzo P. Ziga Memorial District Hospital's Institutional Review Board (Protocol #ZIGA-ER-2026-001) and the researcher's university ethics committee, adhering to the Declaration of Helsinki, Belmont Report, and Republic Act 10173 (Data Privacy Act of 2012). Informed consent was obtained from all 50 nurses and 100 patients/caregivers via IRB-approved forms in English/Filipino/Bicolano, detailing voluntary participation, procedures (surveys/interviews <20 minutes), minimal risks (emotional recall), benefits (policy insights), and unrestricted withdrawal rights without care repercussions. Anonymity and confidentiality were ensured through numeric coding, de-identification of records, dual-encrypted digital storage (password-protected servers), and post-analysis data destruction; no identifiers appeared in reports. Vulnerable participants (e.g., distressed patients) underwent screening with counseling referrals; collection avoided care disruptions via off-peak scheduling. Cultural sensitivity incorporated local languages and trauma-informed methods; power dynamics were mitigated by neutral facilitators and advocate oversight. Findings will be disseminated transparently via hospital briefings without individual attribution.

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