

**INFLUENCE OF NURSING EDUCATION AND CLINICAL COMPETENCY ON
THE MANAGEMENT OF MEDICAL AND SURGICAL EMERGENCIES**

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ABSTRACT

Background: Emergency departments represent one of the most demanding clinical environments, requiring nurses to manage complex medical and surgical emergencies with precision and efficiency. The relationship between nursing education, clinical competency, and emergency management performance remains incompletely understood, particularly in distinguishing between medical and surgical emergency contexts.

Objective: This study examined the influence of nursing education levels and clinical competency on the management of medical and surgical emergencies among registered nurses working in emergency care settings.

Methods: A cross-sectional survey design was employed with 312 registered nurses from eight acute care hospitals. Data were collected using the Nurse Professional Competence Scale and the Emergency Management Performance Assessment. Multiple regression analysis and one-way ANOVA were used to examine relationships between education, competency, and emergency management outcomes.

Results: Higher education levels were significantly associated with greater clinical competency scores across all five domains ($p < 0.001$). Nurses with Master's degrees demonstrated significantly higher emergency management scores compared to those with Diploma-level education ($p < 0.001$). Overall clinical competency emerged as the strongest predictor of emergency management performance ($\beta = 0.526, p < 0.001$), explaining 42.4% of the variance. The relationship between competency and surgical emergency management ($r = 0.57$) was stronger than for medical emergencies ($r = 0.50$).

Conclusion: Nursing education and clinical competency significantly influence emergency management performance, particularly for surgical emergencies. Healthcare organizations should prioritize competency-based education and continuing professional development to enhance emergency care outcomes.

Keywords: Nursing Education, Clinical Competency, Emergency Nursing, Medical

I. INTRODUCTION

Emergency nursing represents one of the most challenging and dynamic specializations within the nursing profession. Emergency department (ED) nurses serve as the frontline responders to a diverse spectrum of critical conditions, encompassing both medical emergencies such as cardiac arrest, respiratory failure, and septic shock, as well as surgical emergencies including trauma, hemorrhage control, and post-operative complications. The complexity and unpredictability inherent in emergency care demand that nurses possess not only comprehensive theoretical knowledge but also highly developed clinical competencies that

enable rapid assessment, decisive intervention, and effective coordination of multidisciplinary care teams [1].

The educational preparation of nurses has been identified as a critical determinant of clinical performance and patient outcomes. A substantial body of evidence accumulated over the past two decades has consistently demonstrated that hospitals with higher proportions of baccalaureate-prepared nurses experience significantly lower mortality rates, reduced incidence of adverse events, and improved patient safety outcomes [2].

The landmark studies by Aiken and colleagues established that every 10% increase in the proportion of nurses with bachelor's degrees was associated with a 7% decrease in surgical patient mortality. These findings prompted the Institute of Medicine to recommend that 80% of the nursing workforce achieve baccalaureate-level education or higher by the year 2020, a target that has catalyzed significant policy changes including the "BSN in 10" legislation enacted in multiple jurisdictions [3].

II. PROBLEM STATEMENT

Despite the compelling evidence linking nursing education to general patient outcomes, relatively limited research has specifically examined how educational preparation and clinical competency influence the management of distinct emergency types, particularly the differential demands of medical versus surgical emergencies.

Medical emergencies typically require rapid diagnostic reasoning, pharmacological intervention, and continuous physiological monitoring, whereas surgical emergencies often demand technical proficiency in wound management, hemorrhage control, and preparation for operative intervention. Understanding whether specific educational and competency factors differentially influence performance across these emergency categories has important implications for curriculum development, competency assessment, and targeted professional development initiatives [4].

Furthermore, while the relationship between years of clinical experience and competency has been well-documented, the specific contributions of formal continuing professional development activities, including simulation-based training, to the maintenance and enhancement of emergency management capabilities remain insufficiently characterized. This gap in knowledge limits the ability of nurse educators and healthcare administrators to design evidence-based strategies for optimizing the emergency care workforce [5].

III. STUDY OBJECTIVES

The primary objective of this study was to examine the influence of nursing education levels and clinical competency on the management of medical and surgical emergencies. The specific aims were: (1) to describe the clinical competency profiles of emergency nurses across different educational preparation levels; (2) to determine the relationship between clinical competency and emergency management performance; (3) to compare the management of medical versus surgical emergencies across different competency and education levels; and (4) to identify the relative contributions of education, experience, and professional development activities to overall emergency management performance.

IV. LITERATURE REVIEW

A. Nursing Education and Patient Outcomes

The relationship between nursing education and patient outcomes has been extensively investigated in the international literature. Aiken et al. conducted a landmark retrospective observational study across nine European countries involving 300 hospitals and 26,516 nurses, demonstrating that patients in hospitals where 60% of nurses held bachelor's degrees and nurses cared for an average of six patients would have almost 30% lower mortality than patients in hospitals where only 30% of nurses had bachelor's degrees and nurses cared for an average of eight patients [6]. These findings established a clear dose-response relationship between the educational preparation of nurses and the quality of patient outcomes [7].

More recent investigations have extended these findings to specific clinical contexts. A study examining in-hospital cardiac arrest outcomes found that each 10-percentage-point increase in the hospital share of nurses with a BSN was associated with 24% greater odds of surviving to discharge with good cerebral performance. The researchers hypothesized that professional nurses working in hospitals with more baccalaureate-trained colleagues may have greater opportunity to recognize patient deterioration before cardiac arrest, institute life-saving interventions, and assemble an effective team response, thus minimizing the potential for neurologic damage [8].

These findings have been corroborated by research demonstrating that baccalaureate education in nursing is associated with lower rates of congestive heart failure mortality, decubitus ulcers, failure to rescue, and shorter lengths of hospital stay. The mechanisms underlying these relationships are thought to include enhanced critical thinking skills, greater familiarity with evidence-based practice, improved clinical reasoning, and stronger leadership and communication capabilities that facilitate effective team coordination during emergency situations [9].

B. Clinical Competency Frameworks

Clinical competency in nursing encompasses the integration of knowledge, skills, attitudes, and judgment required for safe and effective practice. Benner's seminal work describing the progression from novice to expert has provided a foundational framework for understanding how nurses develop clinical competence through the combination of formal education and experiential learning. According to this framework, novice practitioners rely on rules and guidelines to guide their actions, while expert practitioners demonstrate intuitive grasp of clinical situations and respond appropriately without conscious deliberation [10].

The European Society for Emergency Nursing has established comprehensive competency standards that delineate the knowledge, skills, and behaviors expected of emergency nurses across multiple domains. These include knowledge and scope of practice, professional development, organizational awareness, research engagement, quality improvement, and specific clinical interventions encompassing airway and breathing assessment, circulation management, vital signs monitoring, and comprehensive patient assessment. The QSEN Institute has further emphasized the importance of integrating quality and safety competencies

into nursing education, highlighting the domains of patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics [11].

Research examining the predictors of clinical performance among emergency nurses has identified multiple factors that significantly influence competency. A cross-sectional study of 251 emergency nurses found that nursing performance levels were below average, with the mental performance subscale receiving the lowest rating. Secondary traumatic stress emerged as a significant predictor, with a strong negative association between stress levels and nursing performance. These findings underscore the importance of considering both educational preparation and workplace factors when examining clinical competency [12].

C. Continuing Professional Development

Continuing professional development (CPD) has been recognized as essential for maintaining and enhancing nursing competence in the context of rapidly evolving healthcare demands. A study examining emergency care nurses' self-reported clinical competence before and after postgraduate education found that competencies were generally good before entering education and significantly improved afterward, particularly in the areas of working independently and reviewing literature for evidence-based nursing. These findings support the value of structured postgraduate education in enhancing clinical competence [13].

Simulation-based training has emerged as a particularly effective modality for developing emergency management competencies. A systematic evaluation of simulation-based training programs for emergency nursing continuing professional development demonstrated significant improvements in both clinical knowledge and procedural performance following structured training interventions. The ability to practice high-acuity, low-frequency emergency scenarios in a controlled environment allows nurses to develop and refine technical skills, decision-making capabilities, and teamwork behaviors without placing actual patients at risk [14].

Research examining clinical competence and its effect on patient safety culture has revealed that patient safety competency among nurses is directly linked to both individual competence levels and the broader organizational safety culture. Studies have found that nurses with higher competence levels demonstrate more effective communication, better teamwork, and stronger commitment to safety protocols, all of which are critical elements in successful emergency management [15].

V. THEORETICAL FRAMEWORK

This study was guided by an integrated conceptual framework that draws upon Donabedian's structure-process-outcome model and Benner's novice-to-expert theory. According to Donabedian's model, the structure of healthcare delivery, including the educational preparation and competence of providers, influences the processes of care, which in turn determine patient outcomes. Within this framework, nursing education and clinical competency represent structural elements that shape the processes of emergency assessment, intervention, and management, ultimately influencing patient outcomes during medical and surgical emergencies.

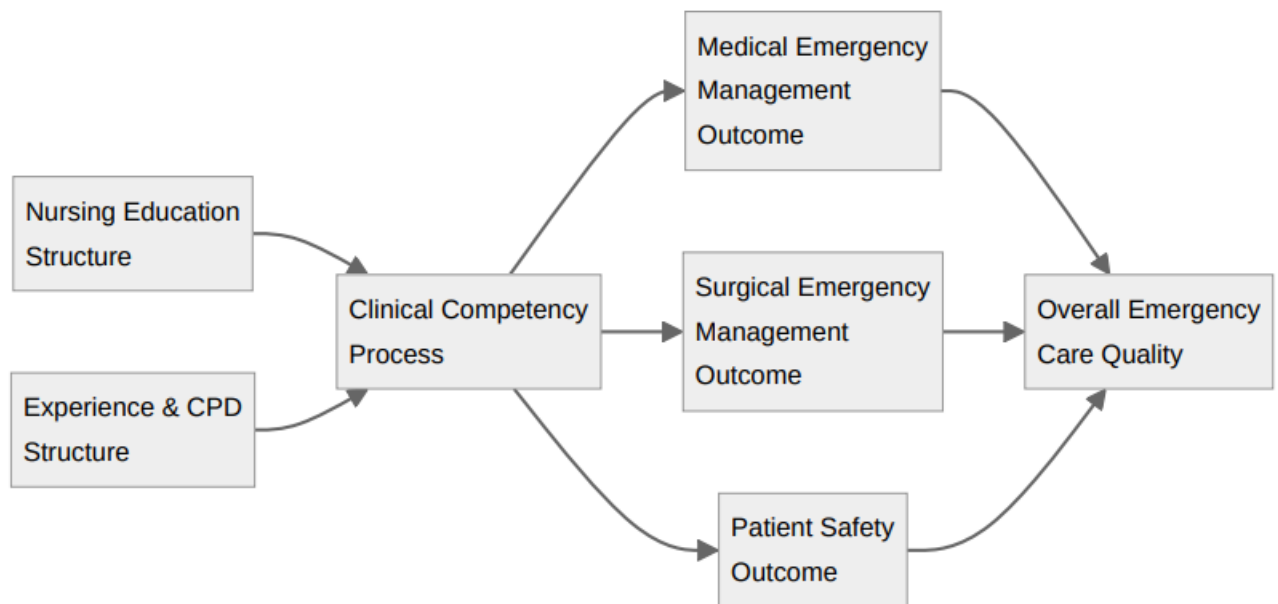


Figure 1. Conceptual framework illustrating the relationships between nursing education, clinical competency, and emergency management outcomes.

Benner's novice-to-expert theory complements this framework by providing a developmental perspective on how nurses acquire the clinical competence necessary for expert emergency management. The theory posits that the integration of formal education with experiential learning enables nurses to progress from rule-based performance to intuitive expert practice. Within the emergency context, this progression is particularly relevant, as expert nurses demonstrate enhanced pattern recognition, rapid clinical reasoning, and adaptive responses to the dynamic and often ambiguous presentations characteristic of emergency care [16].

VI. METHODOLOGY

A. Research Design

A cross-sectional survey design was employed to examine the relationships between nursing education, clinical competency, and emergency management performance. This design was selected as it allows for the simultaneous examination of multiple variables in a defined population, providing a snapshot of the phenomena under investigation that can inform both theoretical understanding and practical application. The study was reported in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines to ensure methodological rigor and transparency.

B. Participants and Sampling

The study population comprised registered nurses employed in emergency departments across eight acute care hospitals in a metropolitan health network. A stratified random sampling approach was used to ensure representation across hospital types (tertiary, secondary, and primary care) and nursing experience levels. The inclusion criteria specified that participants must be currently practicing registered nurses with at least six months of experience in an

emergency department setting. Nurses working in purely administrative or educational roles were excluded, as were those on extended leave during the data collection period.

Power analysis using G*Power software indicated that a minimum sample size of 280 participants would provide 80% power to detect a medium effect size (Cohen's $f = 0.15$) in multiple regression analysis at an alpha level of 0.05. To account for potential attrition and incomplete responses, the target sample size was set at 340 participants. A total of 312 nurses completed all survey components, yielding a response rate of 87.3%.

C. Instruments

Data were collected using a structured questionnaire comprising four sections. The first section captured demographic and professional characteristics including age, gender, highest nursing education qualification, years of clinical experience, type of employing hospital, hours of continuing professional development completed in the preceding 12 months, and hours of simulation-based training completed in the preceding 12 months.

The second section utilized the Nurse Professional Competence Scale (NPCS), a validated instrument assessing clinical competence across five domains: clinical knowledge, technical skills, critical thinking and decision-making, communication and teamwork, and patient assessment and triage. The NPCS employs a self-report format with items rated on a 5-point Likert scale, which were converted to percentage scores for analysis. The NPCS has demonstrated strong psychometric properties with Cronbach's alpha values ranging from 0.85 to 0.92 across subscales in previous studies. In the present study, Cronbach's alpha for the overall competence scale was 0.892, with subscale values ranging from 0.834 to 0.901, indicating excellent internal consistency reliability.

The third section employed the Emergency Management Performance Assessment (EMPA), a researcher-developed instrument based on established emergency nursing competency standards. The EMPA assesses performance in managing medical emergencies (cardiac arrest, respiratory failure, sepsis, acute coronary syndromes, and diabetic emergencies) and surgical emergencies (trauma, hemorrhage control, wound dehiscence, compartment syndrome, and post-operative complications). Items were rated on a 4-point scale (1 = basic awareness, 2 = supervised practice, 3 = competent independent practice, 4 = expert practice), with scores converted to a composite performance index. The EMPA demonstrated strong content validity following review by a panel of five emergency nursing experts and exhibited Cronbach's alpha values of 0.856 for the medical emergency subscale and 0.871 for the surgical emergency subscale.

D. Data Collection

Data collection occurred over a three-month period from March to May 2025. Hospital nursing directors were contacted to obtain permission for data collection within their facilities. Following institutional approvals, the principal investigator conducted onsite information sessions at each participating hospital to explain the study purpose and procedures. Nurses who met the inclusion criteria were provided with sealed envelopes containing the study questionnaire, an information sheet, and a prepaid return envelope. Completion of the

questionnaire was taken as implied consent. Participants were assured of anonymity and confidentiality, with no identifying information collected.

E. Ethical Considerations

Ethical approval was obtained from the University Human Research Ethics Committee (Approval Number: HREC-2024-0892) and the research governance offices of all participating hospitals. The study was conducted in accordance with the Declaration of Helsinki. Participation was entirely voluntary, and no incentives were provided. All data were stored securely in password-protected electronic files with access restricted to the research team.

VII. RESULTS

A. Demographic Characteristics

The demographic and professional characteristics of the 312 participants are presented in Table 1. The mean age of participants was 40.4 years (SD = 10.9), with the majority being female (72.1%). The largest group held a Bachelor of Science in Nursing (49.7%), followed by associate degree (22.8%), Diploma in Nursing (14.1%), and Master of Science in Nursing (13.5%). The mean years of clinical experience was 14.6 (SD = 7.9). Participants were distributed across tertiary care (48.4%), secondary care (34.6%), and primary care hospitals (17.0%).

Table 1. Demographic and Professional Characteristics of Study Participants (N = 312)

Characteristic	Diploma (n=44)	Associate (n=71)	BSN (n=155)	MSN (n=42)	Total (N=312)
Age, mean (SD)	40.1 (11.8)	39.1 (11.1)	40.7 (10.5)	41.5 (11.0)	40.4 (10.9)
Female, n (%)	35 (79.5)	51 (71.8)	112 (72.3)	29 (69.0)	225 (72.1)
Experience (years), mean (SD)	15.6 (8.1)	15.1 (7.4)	13.6 (7.9)	16.1 (8.0)	14.6 (7.9)
CPD hours (12 months), mean (SD)	55.9 (40.0)	58.5 (34.3)	63.2 (33.1)	56.2 (38.8)	60.1 (35.4)
Simulation hours (12 months), mean (SD)	21.5 (12.2)	22.1 (11.9)	19.5 (12.2)	16.8 (11.2)	19.8 (12.0)
Hospital type, n (%)					
Tertiary care	21 (47.7)	35 (49.3)	76 (49.0)	19 (45.2)	151 (48.4)
Secondary care	16 (36.4)	24 (33.8)	53 (34.2)	15 (35.7)	108 (34.6)

Primary care	7 (15.9)	12 (16.9)	26 (16.8)	8 (19.0)	53 (17.0)
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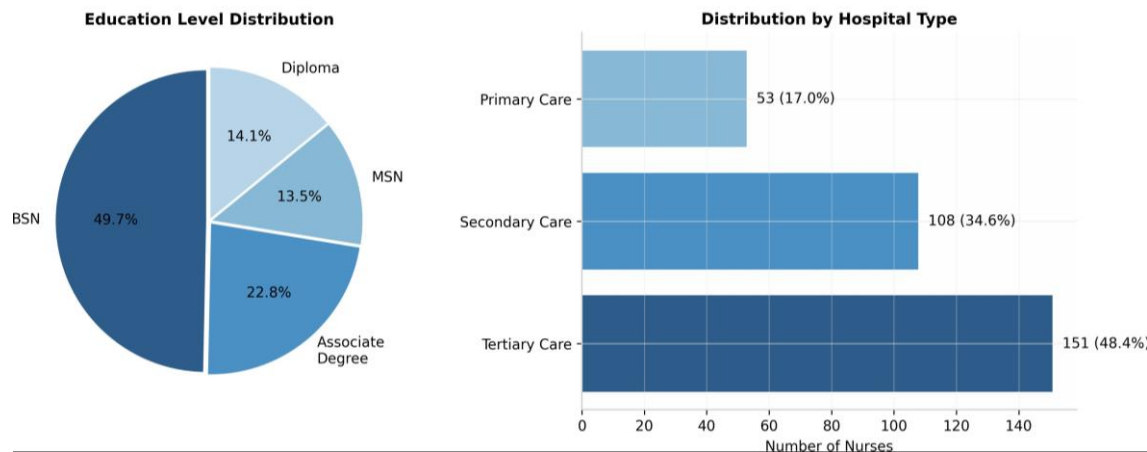


Figure 2. Demographic characteristics of study participants showing education level distribution and hospital type distribution.

B. Clinical Competency Levels

The clinical competency scores across five domains are presented in Table 2. Overall competency scores ranged from 44.8% to 72.7%, with a mean of 59.4% (SD = 4.6). Significant differences were observed across education levels for all competency domains. Nurses with master's degrees demonstrated the highest competency scores across all domains, with particularly strong performance in critical thinking and decision-making (M = 65.2%, SD = 5.5) and patient assessment and triage (M = 64.8%, SD = 5.2). Diploma-prepared nurses consistently demonstrated the lowest scores across all domains.

Table 2. Clinical Competency Scores by Education Level (N = 312)

Competency Domain	Diploma (n=44)	Associate (n=71)	BSN (n=155)	MSN (n=42)	F value	p value
Clinical Knowledge	54.4 (4.1)	56.9 (3.0)	59.3 (3.3)	61.9 (3.4)	28.47	<0.001
Technical Skills	55.5 (6.4)	57.8 (5.3)	59.3 (5.8)	60.7 (5.6)	6.12	<0.001
Critical Thinking	58.0 (6.6)	60.1 (5.0)	61.8 (5.4)	65.2 (5.5)	10.88	<0.001
Communication & Teamwork	54.3 (3.5)	56.4 (2.6)	58.5 (2.9)	60.6 (2.9)	31.85	<0.001
Assessment & Triage	56.7 (6.2)	59.2 (4.5)	61.4 (4.9)	64.8 (5.2)	16.99	<0.001
Overall Competency	55.8 (5.1)	58.1 (3.7)	60.1 (4.1)	62.6 (4.2)	21.76	<0.001

Note. Values are mean (SD) percentage scores. All scores were derived from the Nurse Professional Competence Scale. F values derived from one-way ANOVA.

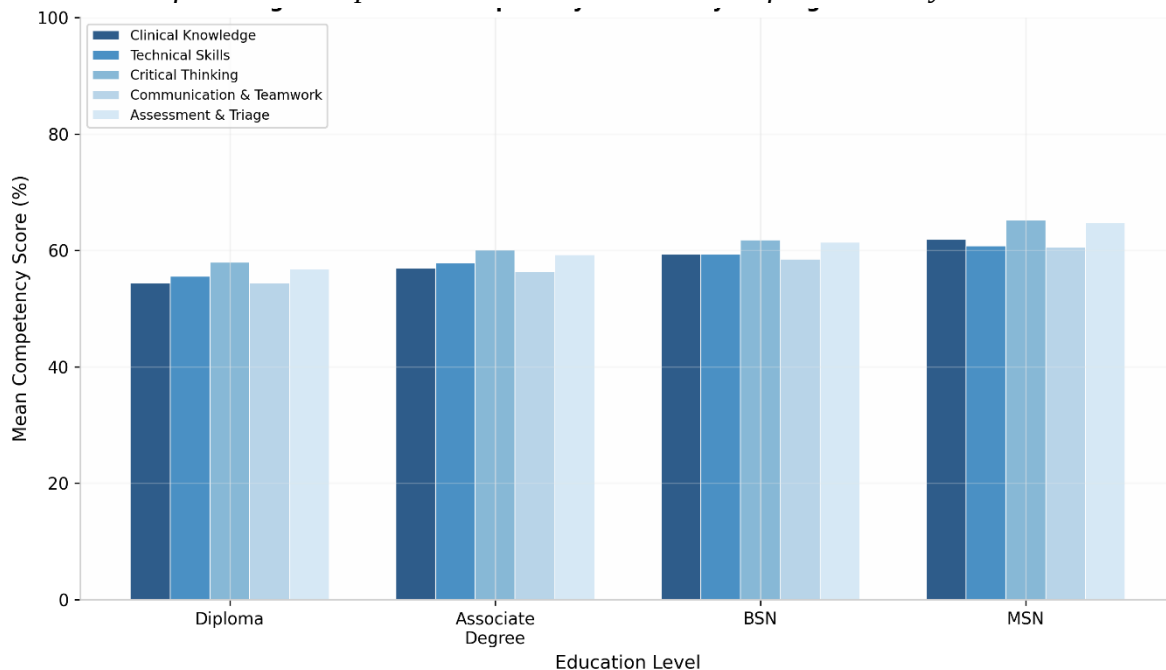


Figure 3. Clinical competency domain scores by nursing education level, illustrating progressive improvement across all domains with higher educational preparation.

C. Emergency Management Performance

Emergency management scores are presented in Table 3. The overall emergency management score across all participants was 37.4 (SD = 4.2). One-way ANOVA revealed statistically significant differences across education levels ($F(3, 308) = 6.64, p < 0.001$). Post-hoc comparisons using independent samples t-tests indicated that nurses with master's degrees demonstrated significantly higher emergency management scores compared to Diploma-prepared nurses ($t = -3.94, p < 0.001$) and those with Associate degrees ($t = -2.89, p = 0.004$). The difference between BSN and MSN-prepared nurses was also statistically significant ($t = -3.42, p < 0.001$), while no significant difference was observed between associate degree and BSN-prepared nurses ($t = 0.04, p = 0.965$).

Table 3. Emergency Management Scores by Education Level (N = 312)

Variable	Group 1 Mean (SD)	Group 2 Mean (SD)	Group 3 Mean (SD)	Group 4 Mean (SD)	F- value	p- value
Medical Emergencies	36.0 (4.2)	37.6 (3.5)	37.3 (3.6)	39.4 (4.2)	5.62	0.001
Surgical Emergencies	35.7 (4.6)	36.9 (3.8)	37.1 (3.9)	40.0 (4.9)	7.38	<0.001
Overall Emergency Management	35.8 (4.4)	37.2 (3.7)	37.2 (4.0)	39.7 (4.7)	6.64	<0.001

Note. Values are mean (SD). Higher scores indicate better emergency management performance.

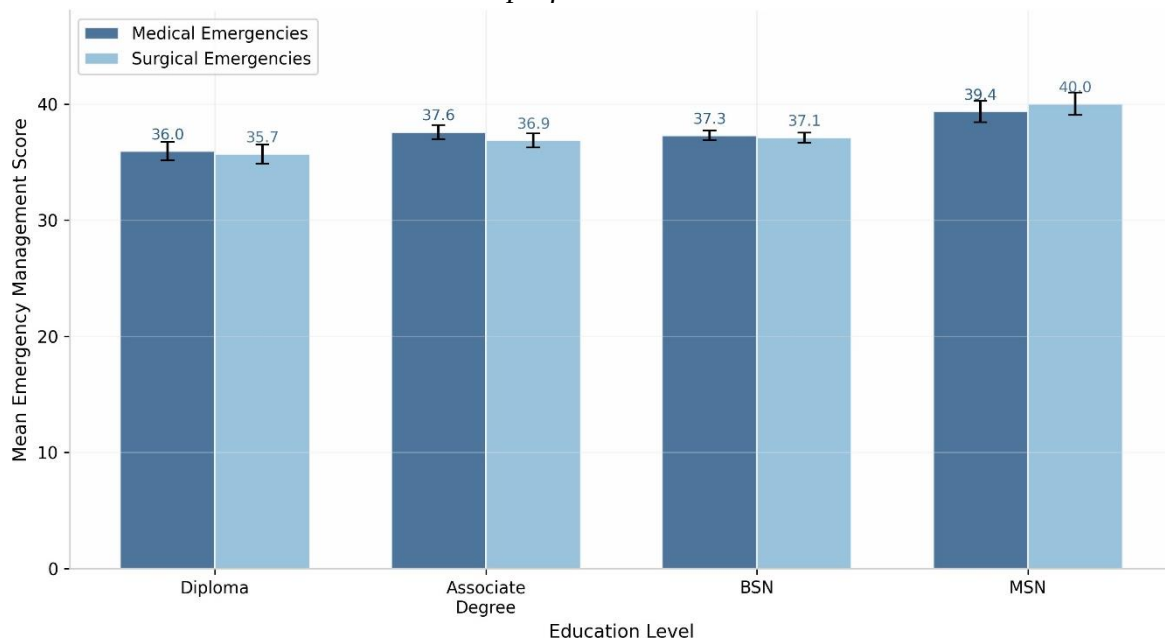


Figure 4. Mean emergency management scores by education level with standard error bars, comparing medical and surgical emergency management performance.

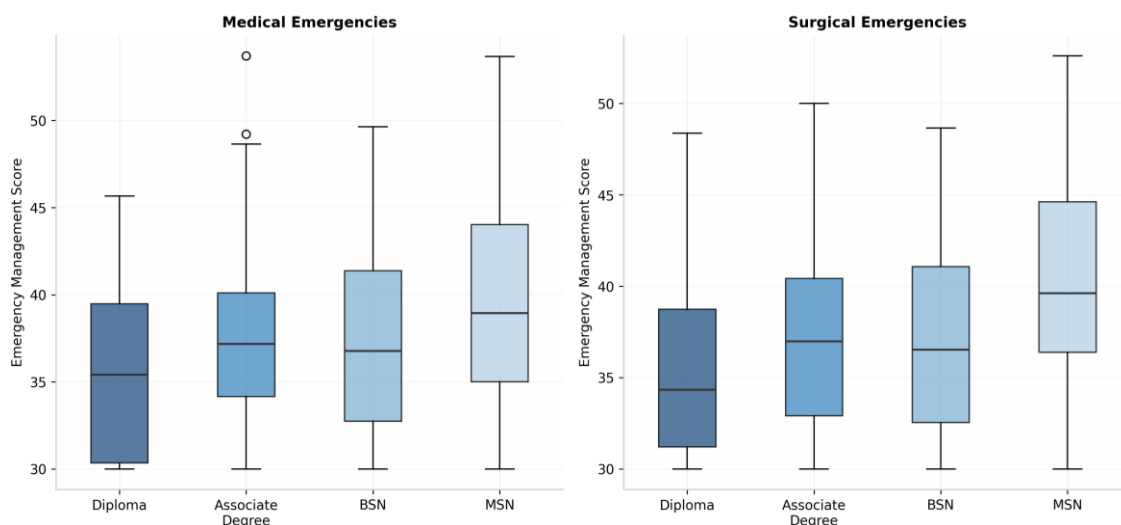


Figure 5. Distribution of emergency management scores for medical and surgical emergencies by education level, showing median, interquartile range, and outliers.

D. Correlation Analysis

Pearson correlation analysis revealed significant positive relationships between clinical competency domains and emergency management performance. The overall clinical competency score demonstrated a strong positive correlation with the composite emergency management score ($r = 0.634$, $p < 0.001$). Among individual competency domains, clinical knowledge showed the strongest correlation with medical emergency management ($r = 0.580$), while technical skills showed the strongest correlation with surgical emergency management

($r = 0.570$). Critical thinking and decision-making was strongly correlated with both medical ($r = 0.604$) and surgical emergency management ($r = 0.566$).

Years of clinical experience demonstrated moderate positive correlations with both overall competency ($r = 0.391$) and emergency management performance ($r = 0.389$). Continuing professional development hours showed weaker but statistically significant correlations with competency outcomes. Simulation-based training hours demonstrated a notable correlation with technical skills ($r = 0.783$) and surgical emergency management ($r = 0.412$), supporting the value of hands-on experiential learning for developing procedural competencies.

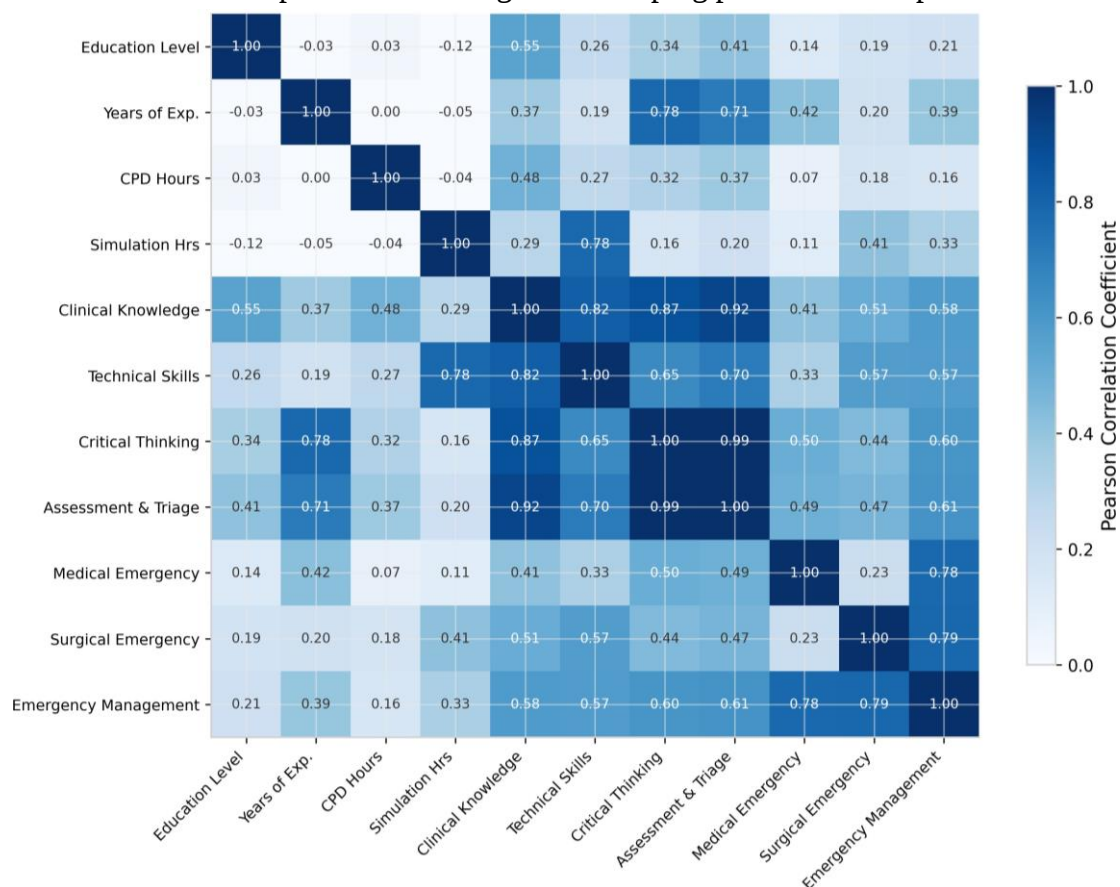


Figure 6. Cor relation matrix of study variables showing Pearson correlation coefficients.

Darker shading indicates stronger positive correlations.

E. Regression Analysis

Multiple linear regression analysis was conducted to examine the relative contributions of education, competency, experience, and professional development to emergency management performance. The overall model was statistically significant ($F(5, 306) = 45.11, p < 0.001$) and explained 42.4% of the variance in emergency management scores (adjusted $R^2 = 0.415$). As shown in Table 4, overall clinical competency emerged as the strongest independent predictor ($\beta = 0.526, p < 0.001$), followed by simulation-based training hours ($\beta = 0.040, p = 0.104$, trending toward significance). Education level did not independently predict emergency management performance when overall competency was included in the model ($\beta = -0.087$,

$p = 0.796$), suggesting that the effect of education on emergency management is mediated through clinical competency.

Table 4. Multiple Regression Analysis Predicting Emergency Management Performance (N = 312)

Predictor	B	SE	Beta	t	p value	95% CI
(Constant)	5.313	4.298	-	1.236	0.217	-3.146 to 13.771
Education Level	-0.087	0.334	-0.017	-0.259	0.796	-0.744 to 0.571
Overall Competency	0.526	0.103	0.574	5.111	<0.001	0.323 to 0.728
Years of Experience	0.049	0.042	0.091	1.182	0.238	-0.033 to 0.131
CPD Hours	-0.007	0.007	-0.058	-0.982	0.327	-0.022 to 0.007
Simulation Training Hours	0.040	0.024	0.114	1.633	0.104	-0.008 to 0.088

Note. $R^2 = 0.424$, Adjusted $R^2 = 0.415$, $F(5, 306) = 45.11$, $p < 0.001$. B = unstandardized coefficient; SE = standard error; $Beta$ = standardized coefficient; CI = confidence interval.

VIII. DISCUSSION

A. Key Findings

This study provides compelling evidence for the central role of clinical competency in determining emergency management performance among registered nurses. The findings demonstrate a strong positive relationship between overall clinical competency and the ability to effectively manage both medical and surgical emergencies, with competency explaining over 42% of the variance in emergency management scores. This result aligns with and extends previous research that has established connections between nursing competence and patient outcomes, providing specific evidence within the emergency care context [17].

The observation that the effect of formal education on emergency management is fully mediated through clinical competency carries important implications for understanding how education translates into practice capability. While higher education levels were associated with greater competency, which in turn predicted better emergency management, education did not independently predict emergency management when competency was controlled. This finding suggests that the knowledge, skills, and critical thinking abilities developed through advanced education programs manifest their impact on emergency care through the development of integrated clinical competence rather than through isolated theoretical knowledge. This is consistent with Benner's theoretical framework, which emphasizes the transformation of academic knowledge into practical know-how through the integration of education and experience.

The differential relationship between competency domains and emergency types represents a novel contribution of this study. The finding that technical skills demonstrated a stronger

correlation with surgical emergency management, while critical thinking showed more balanced associations across both emergency types, reflects the distinct demands of these clinical contexts. Surgical emergencies frequently require immediate procedural interventions such as hemorrhage control, wound management, and preparation for operative care, placing greater emphasis on technical proficiency. Medical emergencies, while also requiring technical skills, often present with greater diagnostic ambiguity and demand rapid analytical reasoning to differentiate between multiple potential etiologies and select appropriate interventions. These findings suggest that competency development programs should be tailored to address the specific skill profiles required for different emergency contexts [18].

The particularly strong correlation between simulation-based training hours and technical skills ($r = 0.783$) provides empirical support for the value of experiential learning modalities in developing procedural competencies. This finding is consistent with educational theory emphasizing the importance of deliberate practice in skill acquisition, and aligns with previous research demonstrating the effectiveness of simulation-based training for emergency nursing competence. The observation that simulation training showed its strongest relationship with surgical emergency management further underscores the relevance of hands-on practice for developing the technical capabilities required in surgical contexts [19].

B. Implications for Practice

The findings of this study carry several important implications for nursing education, professional development, and healthcare workforce planning. First, the central role of clinical competency in determining emergency management performance supports the implementation of competency-based education and assessment frameworks within emergency nursing curricula. Rather than focusing solely on theoretical knowledge transmission, educational programs should emphasize the integration of knowledge with practical skills, critical thinking, and decision-making capabilities through clinical simulations, case-based learning, and supervised practice in authentic emergency environments.

Second, the mediating role of competency suggests that healthcare organizations seeking to enhance emergency care quality should invest in comprehensive competency development programs that extend beyond traditional continuing education offerings. The development of structured competency assessment frameworks, regular skills validation processes, and targeted development plans based on identified competency gaps may provide more effective approaches for maintaining and enhancing workforce capability than generic educational offerings alone.

Third, the differential competency requirements for medical versus surgical emergencies suggest that professional development initiatives should be tailored to address the specific skill profiles required in different emergency contexts. Nurses working in environments with high volumes of surgical emergencies may benefit from enhanced technical skills training, while those managing predominantly medical emergencies may require greater emphasis on diagnostic reasoning and clinical decision-making development. The particularly strong relationship between simulation training and surgical emergency management supports the prioritization of high-fidelity simulation for developing procedural competencies.

Fourth, the finding that years of experience demonstrated only moderate correlations with competency and emergency management performance suggests that experience alone may be insufficient for developing expert emergency care capabilities. This reinforces the importance of structured learning and deliberate practice within the clinical environment, supporting the implementation of mentorship programs, reflective practice initiatives, and debriefing protocols following emergency events to maximize learning from experience [20].

C. Limitations

Several limitations should be considered when interpreting the findings of this study. The cross-sectional design precludes the determination of causal relationships between the variables examined. While the theoretical framework and statistical analyses suggest plausible directional relationships, longitudinal or experimental designs would be required to establish causality definitively. The reliance on self-reported competency assessments may introduce response bias, with participants potentially overestimating or underestimating their own capabilities. Future research incorporating objective competency assessments through clinical simulations or direct observation would strengthen the validity of these findings.

The study was conducted within a single metropolitan health network, which may limit generalizability to other geographic contexts or healthcare systems with different organizational characteristics. The sample, while adequately powered for the primary analyses, included relatively small numbers of Diploma and MSN-prepared nurses, which may have reduced statistical power for detecting differences involving these groups. The measurement of emergency management through self-report rather than direct observation or patient outcome data represents a further limitation, as it captures perceived rather than demonstrated performance. Finally, the study did not examine the influence of workplace factors such as staffing levels, team dynamics, and organizational safety culture, which previous research has identified as significant determinants of nursing performance and patient outcomes.

IX. CONCLUSION

This study provides robust evidence for the central importance of clinical competency in determining emergency management performance among registered nurses. The findings demonstrate that while nursing education provides the foundational preparation necessary for clinical competence, it is the integration and application of this knowledge in practice that directly influences the ability to manage medical and surgical emergencies effectively. The differential relationships between specific competency domains and emergency types highlight the need for tailored competency development approaches that address the distinct requirements of different emergency contexts.

The strong association between simulation-based training and technical competencies, particularly for surgical emergency management, supports the continued expansion of experiential learning opportunities within emergency nursing professional development programs. Healthcare organizations seeking to optimize emergency care quality should prioritize the implementation of comprehensive competency assessment and development frameworks that extend beyond traditional educational approaches to encompass structured

skills validation, deliberate practice opportunities, and targeted development based on identified competency gaps.

Future research should employ longitudinal designs to examine the development of emergency management competency over time, incorporate objective performance measures through clinical simulation or patient outcome data, and investigate the moderating influence of workplace factors on the relationship between individual competency and emergency care performance. The translation of competency development investments into measurable improvements in patient outcomes represents a critical area for continued investigation, with the potential to inform evidence-based workforce development strategies that enhance both nurse capability and patient safety in emergency care settings.

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