

Effectiveness of an Administratively Supported Crisis De-escalation Protocol on Emergency Nurses' Clinical Performance and Clinical Outcomes among Psychiatric Patients Admitted to Intensive Care Units

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Abstract

Background: Psychiatric patients admitted to intensive care units may experience acute agitation, aggression, behavioral dysregulation, and psychological distress, creating considerable challenges for emergency nurses. Effective crisis de-escalation is essential for promoting patient and staff safety, preventing escalation of aggressive behavior, reducing the use of restrictive interventions, and improving the quality of nursing care. However, effective implementation requires standardized procedures, adequate resources, administrative support, and well-prepared nurses capable of recognizing and managing behavioral crises promptly. **Aim:** The aim of this study was to evaluate the effectiveness of an administratively supported crisis de-escalation protocol on emergency nurses' clinical performance and clinical outcomes among psychiatric patients admitted to intensive care units. **Methods:** A quasi-experimental one-group pretest–posttest design was used. The study was conducted among a purposive sample of 100 participants, including 50 emergency nurses and 50 psychiatric patients, recruited from the Intensive Care Units and Emergency department at Fayoum University Hospitals, Egypt. Data were collected using a structured nurses' knowledge questionnaire, a crisis de-escalation clinical performance observational checklist, and a psychiatric patient clinical outcomes

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assessment tool. **Results:** Following implementation of the protocol, emergency nurses demonstrated significant improvement in their knowledge and clinical performance compared with the pre-intervention assessment ($p < 0.001$). The proportion of nurses achieving satisfactory clinical performance increased substantially after the intervention. Psychiatric patients also demonstrated significant improvement in clinical and behavioral outcomes, including reduced episodes of severe agitation and aggressive behavior, decreased use of restrictive interventions, and improved cooperation with nursing care ($p < 0.001$). Furthermore, improved nurses' clinical performance was associated with more favorable patient outcomes. **Conclusion:** The administratively supported crisis de-escalation protocol was effective in enhancing emergency nurses' clinical performance and improving clinical outcomes among psychiatric patients admitted to intensive care units. Combining standardized de-escalation procedures with administrative support, staff training, resource availability, and multidisciplinary collaboration can strengthen the safe and effective management of psychiatric crises. **Recommendations:** The administratively supported crisis de-escalation protocol should be integrated into routine nursing practice in intensive care units caring for psychiatric patients. Regular competency-based training, simulation, administrative support, and continuous monitoring of nurses' performance and patient outcomes are recommended to maintain effective crisis management and enhance patient safety.

Keywords: Administratively Supported Crisis De-escalation Protocol, Clinical Outcomes, Emergency Nurses' Clinical Performance, Psychiatric Patients Admitted to Intensive Care Units

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Introduction

Psychiatric emergencies are complex clinical situations that require rapid assessment, effective communication, and timely nursing intervention. Patients experiencing acute psychiatric crises may present with agitation, aggression, severe emotional distress, impaired behavioral control, or other forms of behavioral dysregulation that can threaten their own safety and the safety of healthcare professionals and other patients. In emergency and intensive care settings, these situations may be particularly challenging because nurses must simultaneously address immediate behavioral concerns, maintain therapeutic communication, and identify possible underlying medical or psychiatric causes of the crisis (Richmond et al., 2022; Roppolo et al., 2020).

Crisis de-escalation is considered an essential component of the safe management of acute agitation and aggressive behavior. It involves the use of verbal and non-verbal communication techniques to reduce emotional arousal, establish a collaborative relationship, maintain safety, and help patients regain behavioral control (Celofiga et al., 2022). Effective de-escalation emphasizes respect, empathy, active listening, appropriate personal

space, calm communication, and avoidance of provocative or confrontational interactions. These approaches may help prevent escalation and reduce the need for restrictive interventions when implemented appropriately (National Institute for Health and Care Excellence (World Health Organization [WHO], 2023).

For emergency nurses, the ability to recognize early warning signs of agitation and aggression and to apply appropriate de-escalation strategies is an important component of clinical competence. Nurses are frequently among the healthcare professionals who remain closest to patients during behavioral crises; therefore, their knowledge, communication skills, situational awareness, and ability to respond promptly can influence the progression of the crisis. Current guidance emphasizes staff education and competency-based training in recognizing early signs of agitation, understanding potential triggers, using calming and distraction techniques, maintaining appropriate personal space, and responding in a measured and non-provocative manner (Price et al., 2024).

Although de-escalation is primarily a clinical nursing skill, its successful implementation is also influenced by organizational and

administrative factors. Effective crisis management requires clear institutional policies, adequate staffing and resources, appropriate environmental arrangements, staff training, multidisciplinary collaboration, and mechanisms for monitoring the quality and safety of care. NICE recommends that healthcare organizations provide staff training in de-escalation and maintain up-to-date policies for the management of violence and aggression. Thus, administrative support can provide the organizational infrastructure necessary for nurses to apply standardized crisis-management procedures consistently (Almulla et al., 2026).

The reduction of restrictive interventions is another important goal of contemporary psychiatric crisis management. Although restraint or seclusion may sometimes be required when there is an immediate risk of serious harm, these interventions should not be used as punishment or for staff convenience and should represent the least restrictive response appropriate to the level of risk. International guidance increasingly emphasizes the prevention and reduction of coercive practices while promoting approaches that respect patients' dignity, autonomy, and human rights (Perers et al., 2022).

In intensive care and emergency environments, psychiatric patients may require continuous observation and rapid intervention because changes in agitation, aggression, cooperation, or emotional regulation can occur rapidly. A structured crisis de-escalation protocol can provide nurses with a consistent framework for assessment, communication, intervention, safety monitoring, and documentation. Evidence from implementation of Project BETA in emergency care indicates that structured approaches emphasizing verbal de-escalation as a first-line strategy can improve management of agitation and contribute to reductions in physical assaults on healthcare staff (Celofiga et al., 2022).

Furthermore, crisis de-escalation should be viewed as part of a broader patient-centered approach rather than simply a technique for controlling aggressive behavior. The World Health Organization emphasizes that people with mental health conditions have the right to accessible, acceptable, and good-quality care, as well as participation in decisions concerning their healthcare. Consequently, crisis interventions should seek to preserve dignity, promote communication and collaboration, minimize coercion, and support the patient's

recovery whenever clinically possible (Goodman et al., 2020).

Accordingly, integrating standardized crisis de-escalation procedures with administrative support may provide a comprehensive framework for improving emergency nurses' knowledge and clinical performance while promoting safer and more therapeutic outcomes for psychiatric patients. Such an approach can combine competency-based education, simulation and practical training, clear institutional procedures, resource availability, multidisciplinary communication, and continuous evaluation of nursing performance and patient outcomes (Eltrass et al., 2026). Therefore, evaluating an administratively supported crisis de-escalation protocol is important for determining its potential contribution to the quality and safety of psychiatric crisis management in intensive care and emergency settings.

Significance of the Study

Psychiatric emergencies involving acute agitation, aggression, and behavioral dysregulation represent important challenges for emergency and intensive care nurses because they require rapid assessment, effective communication, and immediate safety-oriented interventions. Inadequate management of behavioral crises may increase the risk of harm to patients and healthcare workers and may contribute to the use of restrictive interventions. Therefore, strengthening nurses' competence in crisis de-escalation is an important component of safe and patient-centered psychiatric care. An administratively supported crisis de-escalation protocol may provide emergency nurses with standardized procedures for early recognition of escalating behavior, therapeutic communication, verbal de-escalation, risk assessment, and appropriate management of behavioral emergencies. Combining clinical training with administrative support, adequate resources, clear policies, and multidisciplinary collaboration may facilitate consistent application of de-escalation practices in intensive care settings.

The present study is significant because it addresses both **nurse-related and patient-related outcomes**. Improving nurses' knowledge and clinical performance may enhance their ability to manage psychiatric crises safely and systematically, while effective implementation of de-escalation

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strategies may contribute to reducing severe agitation and aggressive episodes, minimizing restrictive interventions, and improving patients' cooperation with nursing care. The findings may also provide useful evidence for nursing administrators and hospital managers when developing policies, training programs, competency assessments, and quality-improvement initiatives related to psychiatric crisis management.

Aim of the Study

The aim of this study was to evaluate the effectiveness of an administratively supported crisis de-escalation protocol on emergency nurses' clinical performance and clinical outcomes among psychiatric patients admitted to intensive care units .

This aim was achieved through the following objectives:

- Assess emergency nurses' knowledge regarding crisis de-escalation before and after implementation of the protocol.
- Assess emergency nurses' clinical performance regarding crisis de-escalation before and after implementation of the protocol.
- Develop and implement an administratively supported crisis de-escalation protocol for emergency nurses.
- Assess clinical and behavioral outcomes among psychiatric patients before and after implementation of the protocol.
- Determine the relationship between emergency nurses' clinical performance and psychiatric patients' clinical outcomes after implementation of the protocol.

Research Hypotheses

H1: Emergency nurses who receive the administratively supported crisis de-escalation protocol will demonstrate significantly higher knowledge scores after implementation of the protocol compared with their pre-intervention scores.

H2: Emergency nurses who receive the administratively supported crisis de-escalation protocol will demonstrate significantly improved clinical performance after implementation of the protocol compared with their pre-intervention performance.

H3: Psychiatric patients managed after implementation of the administratively supported crisis de-escalation protocol will demonstrate significantly improved clinical and behavioral outcomes compared with their pre-intervention outcomes.

H4: There will be a statistically significant relationship between emergency nurses' clinical performance and the clinical and behavioral outcomes of psychiatric patients following implementation of the administratively supported crisis de-escalation protocol.

Subjects and Methods

Research Design

A quasi-experimental one-group pretest–posttest design was utilized to evaluate the effectiveness of an administratively supported crisis de-escalation protocol on emergency nurses' clinical performance and clinical outcomes among psychiatric patients admitted to intensive care units.

Study Setting

The study was conducted at the Emergency Department and Intensive Care Units of Fayoum University Hospital, Egypt. These settings were selected because they provide emergency and intensive care services for patients presenting with acute psychiatric and behavioral crises and require nurses to respond promptly to agitation, aggression, and other forms of behavioral dysregulation.

Subjects

The study included 100 participants, consisting of 50 emergency nurses and 50 psychiatric patients.

A. Emergency Nurses

A **purposive sample of 50 emergency nurses** was recruited from the Emergency Department and Intensive Care Units. Nurses were eligible to participate if they were directly involved in the care of psychiatric patients, had at least **six months of clinical experience** in the selected settings, and were willing to participate in the study. Nurses were excluded if they were on prolonged leave during the study period or were not directly involved in patient care.

B. Psychiatric Patients

A **purposive sample of 50 psychiatric patients** was included from the selected Intensive Care Units. Patients were eligible if they had a documented psychiatric condition and were admitted with behavioral manifestations requiring nursing management, such as agitation, aggression, behavioral dysregulation, or severe psychological distress. Patients were excluded if they had a medical condition requiring immediate life-saving intervention that prevented assessment, or if their clinical condition did not permit participation in the assessment procedures.

Sample Size Calculation

The required sample size was calculated using the following formula for estimating the sample size for a quasi-experimental study:

$$n = \frac{Z^2 P(1-P)}{d^2}$$

Where:

- **n** = required sample size
- **Z** = standard normal deviation corresponding to a 95% confidence level = **1.96**
- **P** = estimated proportion of the characteristic under study = **0.50**
- **d** = margin of error = **0.14**

Data Collection Tools

Tool I: Sociodemographic and Professional Data Questionnaire for Emergency Nurses:

This tool was developed by the researcher to assess the sociodemographic and professional characteristics of the studied emergency nurses. It consisted of five main items covering age, sex, educational qualification, years of nursing experience, and previous training in crisis de-escalation.

Tool II: Structured Nurses' Knowledge Questionnaire

A **structured nurses' knowledge questionnaire** was developed by the researchers based on a review of relevant literature and evidence-based recommendations concerning psychiatric emergencies, acute agitation, aggression, and crisis de-escalation. The questionnaire was

guided particularly by the verbal de-escalation principles of **Richmond et al. (2022)** and the recommendations of the National Institute for Health and Care Excellence (**NICE, 2015**). It was used to assess emergency nurses' knowledge before and after implementation of the administratively supported crisis de-escalation protocol. The questionnaire covered the following areas: basic concepts of psychiatric crises, agitation and aggression; causes and precipitating factors of behavioral escalation; early warning signs; principles of crisis de-escalation; therapeutic communication; verbal and non-verbal de-escalation techniques; safety measures; management and prevention of aggressive behavior; appropriate use of restrictive interventions; and post-crisis care, documentation, and multidisciplinary communication. Each knowledge item was scored **1 for a correct answer and 0 for an incorrect answer or "don't know" response**. The total knowledge score was calculated by summing the scores of all items and converting the obtained score into a percentage using the formula: **Knowledge percentage = (obtained score/maximum possible score) × 100**. Nurses' knowledge was classified as **poor (<60%)**, **fair (60–<75%)**, and **good (≥75%)**, with higher scores indicating better knowledge regarding crisis de-escalation.

Tool III: Crisis De-escalation Clinical Performance Observational Checklist

A **crisis de-escalation clinical performance observational checklist** was developed by the researchers to assess emergency nurses' actual performance during the management of psychiatric patients experiencing agitation, aggression, or behavioral escalation. The checklist was developed according to the principles of verbal de-escalation proposed by **Richmond et al. (2012)** and the **NICE (2015)** recommendations for the management of violence and aggression. The checklist covered nurses' performance in early recognition and assessment of escalating behavior, identification of potential triggers, assessment of immediate risk, maintenance of patient and staff safety, appropriate personal space, reduction of environmental stimulation, therapeutic communication, active listening, empathy, use of calm and clear verbal communication, offering appropriate choices, distraction and calming techniques, avoidance of threatening or confrontational behaviors, appropriate response to escalating aggression, seeking assistance when necessary, use of the least restrictive approach, monitoring

following de-escalation, documentation, communication with the multidisciplinary team, and post-crisis review. Each item was scored 1 when correctly performed and 0 when incorrectly performed or not performed. The total performance score was obtained by summing the scores of all checklist items and converting the result into a percentage using the formula: Performance percentage = (obtained score/maximum possible score) × 100. Nurses' clinical performance was categorized as unsatisfactory (<60%) and satisfactory (≥60%). A higher percentage score indicated better application of crisis de-escalation skills in clinical practice.

Tool V: Sociodemographic and Clinical Data Questionnaire for Psychiatric Patients:

This tool was developed by the researcher to collect the sociodemographic and clinical characteristics of the studied psychiatric patients. It consisted of four main items covering age, sex, psychiatric diagnosis, and main behavioral presentation.

Tool IV: Psychiatric Patients' Clinical and Behavioral Outcomes Assessment Tool

A **psychiatric patients' clinical and behavioral outcomes assessment tool** was developed by the researchers to evaluate the effect of the crisis de-escalation protocol on the clinical and behavioral outcomes of psychiatric patients before and after its implementation. The tool was guided by the objectives of crisis de-escalation described by **Richmond et al. (2012)**, including reducing agitation and aggression, maintaining patient and staff safety, promoting behavioral control, improving cooperation, and minimizing the need for coercive or restrictive interventions, as well as by **NICE (2015)** recommendations concerning monitoring violence and aggression and reducing restrictive practices. The tool assessed the frequency and severity of agitation, occurrence of verbal and physical aggressive behavior, threatening or destructive behaviors, cooperation with nursing care, response to nursing communication and instructions, need for emergency assistance, use of restrictive interventions, and behavioral stabilization following the de-escalation intervention. For adverse behavioral outcomes, each item was scored 0 when absent and 1 when present, while patient cooperation and behavioral stabilization items were scored 0 = not achieved, 1 = partially achieved, and 2 = fully achieved. Restrictive intervention was scored 0 = not required and 1 = required. The individual outcome domains were analyzed

separately because some outcomes, such as agitation, aggression, and restrictive interventions, represent adverse events in which a lower frequency indicates improvement, whereas cooperation and behavioral stabilization represent positive outcomes in which higher scores indicate improvement. The results were presented as frequencies and percentages before and after implementation of the protocol, with higher rates of cooperation and stabilization and lower rates of severe agitation, aggressive behavior, and restrictive interventions indicating more favorable patient outcomes.

Validity

The content and face validity of the three study tools were established by a panel of **five experts** in the fields of psychiatric and mental health nursing, emergency nursing, nursing administration, and medical-surgical nursing. The experts reviewed the tools for clarity, relevance, comprehensiveness, appropriateness of the items, and suitability for assessing nurses' knowledge and clinical performance and psychiatric patients' clinical and behavioral outcomes. Their comments and suggestions were considered, and necessary modifications were made accordingly. The final versions of the tools were prepared after incorporating the recommended modifications.

Reliability

The reliability of the study tools was assessed to determine their internal consistency and stability. **Cronbach's alpha coefficient** was used to assess the internal consistency of the structured nurses' knowledge questionnaire and the psychiatric patients' clinical and behavioral outcomes assessment tool, while reliability of the clinical performance observational checklist was assessed using appropriate inter-rater agreement procedures. The obtained reliability coefficients 0.87 demonstrated acceptable reliability of the study instruments and confirmed their suitability for application in the main study.

Pilot Study

A pilot study was conducted on 10% of the total study sample (10 participants) before the beginning of the main data collection. The pilot sample included 5 emergency nurses and 5 psychiatric patients who fulfilled the eligibility criteria. The pilot study aimed to assess the clarity and applicability of the study

tools, determine the approximate time required to complete each tool, identify any difficulties that might arise during data collection, and evaluate the feasibility of implementing the proposed crisis de-escalation protocol. Necessary modifications were made based on the pilot findings. Participants included in the pilot study were excluded from the final study sample to avoid duplication of data.

Ethical Considerations

The study was conducted after obtaining approval from the Scientific Research Ethics Committee of the Faculty of Nursing. Approval to conduct the study was obtained from the responsible authorities of the selected setting after explaining the purpose and procedures of the study. Ethical principles related to research involving human participants were strictly followed. Written informed consent was obtained from each participating nurse and from psychiatric patients or their legally authorized representatives, according to the patient's clinical condition and institutional requirements. Participants were informed about the purpose of the study, the expected procedures, their voluntary participation, and their right to withdraw from the study at any time without affecting the care or services they received. Confidentiality and anonymity were maintained by using codes instead of participants' names, and all collected information was used only for scientific research purposes. The intervention was implemented without compromising patients' safety or their routine medical and psychiatric care. During behavioral crises, immediate safety and clinically indicated care took priority over research procedures.

Data Collection Procedure

Data collection was carried out over a period of approximately **three months** at the Emergency Department and Intensive Care Units of Fayoum University Hospital. The researchers first obtained the necessary administrative approvals and coordinated with the nursing administration and responsible healthcare teams to facilitate access to the study settings and organize the intervention. Eligible emergency nurses and psychiatric patients were recruited according to the predetermined inclusion criteria. Baseline assessment was then conducted before implementation of the protocol. Emergency nurses completed the structured knowledge

questionnaire, and their crisis de-escalation clinical performance was assessed using the observational checklist during relevant clinical situations. At the same time, the clinical and behavioral status of the selected psychiatric patients was assessed using the psychiatric patients' clinical and behavioral outcomes assessment tool. After the baseline assessment, the administratively supported crisis de-escalation protocol was implemented for the participating emergency nurses through structured educational, discussion, demonstration, role-play, and simulation-based sessions. Administrative support was maintained throughout implementation through coordination with nursing administration, facilitation of staff attendance, provision of educational materials and required resources, reinforcement of standardized procedures, and promotion of multidisciplinary communication. Following completion of the intervention, the same assessment tools were reapplied to evaluate changes in nurses' knowledge and clinical performance and psychiatric patients' clinical and behavioral outcomes. The researchers maintained close observation during implementation to ensure adherence to the protocol and to document participants' responses.

Phases of the Intervention

The administratively supported crisis de-escalation protocol was implemented through **five sequential phases: preparation, assessment, planning, implementation, and evaluation**. The phases were designed to ensure that improvement in emergency nurses' crisis-management skills was supported by both structured education and an enabling administrative environment.

Phase I: Preparation Phase

During this phase, the researchers obtained the necessary administrative approvals from the responsible authorities at Sohag University Hospitals and coordinated with the nursing administration and healthcare teams in the Emergency Department and Intensive Care Units. The researchers reviewed relevant literature and evidence-based recommendations regarding psychiatric emergencies, acute agitation, aggression, verbal de-escalation, patient safety, and reduction of restrictive interventions. The crisis de-escalation protocol was then prepared in accordance with the identified educational and clinical needs. The required educational

materials, case scenarios, demonstration materials, and simulation activities were also prepared. Administrative support was established through coordination regarding nurses' attendance, availability of training facilities and resources, and facilitation of multidisciplinary communication.

Phase II: Baseline Assessment Phase

Before implementation of the protocol, baseline data were collected from the participating emergency nurses and psychiatric patients. The nurses' knowledge regarding crisis de-escalation was assessed using the Structured Nurses' Knowledge Questionnaire, while their actual clinical performance was assessed using the Crisis De-escalation Clinical Performance Observational Checklist. The clinical and behavioral outcomes of the selected psychiatric patients were assessed using the Psychiatric Patients' Clinical and Behavioral Outcomes Assessment Tool. These baseline assessments provided a reference point for evaluating changes following implementation of the intervention.

Phase III: Planning Phase

Based on the baseline assessment and review of the relevant evidence, the researchers organized the content of the crisis de-escalation protocol according to the identified learning needs of the nurses. The protocol was organized into **six educational and practical sessions** delivered over approximately three weeks, with two sessions per week and each session lasting approximately 60–90 minutes. The sessions addressed psychiatric crisis concepts, early recognition of agitation, risk assessment, therapeutic communication, verbal and non-verbal de-escalation, safety management, management of aggression, restrictive interventions, post-crisis care, documentation, and multidisciplinary collaboration. Different teaching methods, including interactive lectures, group discussion, demonstration, role-play, clinical scenarios, and simulation, were incorporated to facilitate both knowledge acquisition and practical skill development.

Phase IV: Implementation Phase

The crisis de-escalation protocol was implemented through six structured sessions. **Session 1** addressed psychiatric crisis, agitation, aggression, behavioral dysregulation, precipitating factors, and early warning signs.

Session 2 focused on systematic assessment of escalating behavior, identification of triggers, risk assessment, environmental safety, and appropriate positioning. **Session 3** focused on therapeutic communication and verbal de-escalation, including active listening, empathy, calm communication, appropriate choices, reassurance, distraction, and avoidance of confrontation. **Session 4** addressed non-verbal de-escalation, personal space, body language, environmental modification, and staff and patient safety. **Session 5** focused on management of escalating aggression, appropriate assistance, least restrictive interventions, monitoring, documentation, and multidisciplinary communication. **Session 6** integrated all previously learned skills through clinical scenarios and simulation exercises, followed by feedback, correction of performance errors, post-crisis care, and evaluation of the nurses' ability to apply the protocol.

Throughout the implementation phase, **administrative support** was maintained by facilitating nurses' participation, providing the necessary educational and clinical resources, reinforcing standardized crisis-management procedures, facilitating communication with the multidisciplinary team, and supporting the consistent application of the protocol in clinical practice.

Intervention Sessions

The **administratively supported crisis de-escalation protocol** was implemented through **six structured sessions** over approximately **three weeks**, with **two sessions per week**, and each session lasting approximately **60–90 minutes**. The sessions combined theoretical education with practical training, role-play, clinical scenarios, and simulation to facilitate the transfer of knowledge into clinical practice.

Session 1: Introduction to Psychiatric Crisis and Crisis De-escalation

The first session introduced the nurses to the concept of psychiatric crisis, acute agitation, aggression, and behavioral dysregulation. It addressed common psychiatric and environmental causes of agitation, potential triggers, early warning signs of behavioral escalation, and the importance of early recognition. The session also emphasized the objectives of crisis de-escalation, including maintaining patient and staff safety, reducing behavioral escalation, promoting therapeutic

communication, and minimizing the need for restrictive interventions. The session was delivered through interactive lecture, discussion, and clinical examples.

Session 2: Assessment and Early Recognition of Escalating Behavior

The second session focused on systematic assessment of the agitated psychiatric patient. Nurses were trained to identify changes in behavior, recognize early warning signs, assess the severity of agitation, identify possible triggers, assess immediate risks, and evaluate environmental factors that may contribute to escalation. Nurses were also trained to identify situations requiring additional assistance and to maintain appropriate personal space and a safe exit route. Practical case scenarios were used to allow nurses to practice rapid assessment and risk recognition.

Session 3: Therapeutic Communication and Verbal De-escalation

The third session focused on therapeutic communication and verbal de-escalation techniques. Nurses were trained to approach patients calmly, use a respectful and non-threatening tone, listen actively, acknowledge patients' concerns and emotions, use simple and clear language, avoid arguing or challenging the patient, and provide realistic choices whenever possible. Techniques such as distraction, calming statements, reassurance, and encouraging cooperation were demonstrated. Role-play activities were used in which nurses practiced responding to different levels of agitation.

Session 4: Non-verbal De-escalation and Safety Management

The fourth session addressed non-verbal communication and safety measures during psychiatric emergencies. Nurses were trained in appropriate body posture, facial expression, eye contact, personal space, positioning, avoidance of threatening gestures, and avoidance of sudden movements. The session also covered environmental safety, reduction of unnecessary stimulation, removal of potential hazards, calling for assistance, and maintaining the safety of the patient, other patients, and healthcare workers. Simulation exercises were used to reinforce appropriate positioning and safety responses.

Session 5: Management of Aggression and Restrictive Interventions

The fifth session focused on managing escalating aggression and preventing harm. Nurses were trained to recognize worsening behavioral escalation, continue de-escalation whenever possible, seek assistance appropriately, follow institutional procedures, and apply the least restrictive approach when an immediate risk of harm was present. The session emphasized that restrictive interventions should not be used as punishment or for staff convenience and should be implemented only when clinically indicated according to institutional policy. Nurses were also trained in monitoring, documentation, communication, and reassessment following any restrictive intervention. Case discussions and simulation scenarios were used to reinforce decision-making and safe practice.

Session 6: Integrated Simulation, Post-crisis Care, and Evaluation

The final session integrated the skills covered in the previous sessions through comprehensive clinical scenarios. Nurses participated in simulated psychiatric crises involving increasing agitation, verbal aggression, and potential physical aggression. Each nurse was expected to assess the situation, identify early warning signs, establish safety, communicate therapeutically, apply verbal and non-verbal de-escalation techniques, seek assistance when appropriate, and reassess the patient's response. The session also covered post-crisis care, documentation, communication with the multidisciplinary team, identification of triggers, and post-incident review. Immediate feedback and corrective guidance were provided to nurses during the practical activities.

Administrative Support Throughout the Sessions

Administrative support was provided throughout all intervention sessions through coordination with nursing administration, scheduling nurses to facilitate attendance, ensuring availability of the training environment and educational materials, supporting access to necessary clinical resources, reinforcing the standardized crisis-management procedure, and facilitating communication between emergency nurses and the multidisciplinary healthcare team. This component was incorporated to ensure that

improvement in nurses' knowledge and performance was supported by an appropriate organizational environment rather than relying exclusively on individual nurse training.

Phase V: Evaluation and Follow-up Phase

After completion of the intervention, the researchers conducted a post-intervention assessment using the same study tools. Nurses' knowledge was reassessed using the Structured Nurses' Knowledge Questionnaire, and their clinical performance was reassessed using the Crisis De-escalation Clinical Performance Observational Checklist. The clinical and behavioral outcomes of psychiatric patients were reassessed using the Psychiatric Patients' Clinical and Behavioral Outcomes Assessment Tool. Pre- and post-intervention findings were compared to determine changes in nurses' knowledge and clinical performance and in patients' agitation, aggressive behavior, cooperation with nursing care, behavioral stabilization, and use of restrictive interventions. The relationship between nurses' post-intervention clinical performance and patient outcomes was also examined.

Statistical Analysis

The collected data were organized, coded, tabulated, and statistically analyzed using the Statistical Package for the Social Sciences (SPSS), version 26. Descriptive and inferential statistics were used according to the nature of

the study variables. Frequencies and percentages were used to describe categorical variables, while means, standard deviations, medians, and ranges were used to summarize quantitative variables. The paired t-test was used to compare the mean knowledge and clinical performance scores of the same emergency nurses before and after implementation of the crisis de-escalation protocol when the data were normally distributed. For categorical paired outcomes, such as nurses' knowledge and performance levels and psychiatric patients' behavioral outcomes before and after the intervention, the McNemar test was used for dichotomous variables, while the McNemar-Bowker test of symmetry was used when appropriate for variables with more than two paired categories. When quantitative data were not normally distributed, the appropriate non-parametric test, such as the Wilcoxon signed-rank test, was used. The Pearson correlation coefficient (r) was used to examine the relationship between emergency nurses' clinical performance scores and psychiatric patients' clinical and behavioral outcomes when assumptions for parametric correlation were satisfied; otherwise, Spearman's rank correlation coefficient was applied. The Chi-square test was used when appropriate to examine associations between categorical independent variables. Statistical significance was considered at $p < 0.05$, while $p < 0.001$ was considered highly statistically significant. The results were presented in tables using the test statistic and corresponding p-value.

Table (1): Distribution of the studied emergency nurses according to their sociodemographic characteristics (n=50)

Sociodemographic characteristics	No.	%
Age (years)		
20–<30	12	24.0
30–<40	24	48.0
≥40	14	28.0
Mean ± SD	34.1 ± 7.2	
Sex		
Male	12	24.0
Female	38	76.0
Educational qualification		

Table (1) shows that nearly half of the studied nurses (48.0%) were aged 30–<40 years, with a mean age of 34.1 ± 7.2 years. Female nurses constituted the majority of the sample (76.0%),

Sociodemographic characteristics	No.	%
Nursing diploma	17	34.0
Bachelor of Nursing	28	56.0
Postgraduate qualification	5	10.0
Years of nursing experience		
6 months–<5 years	21	42.0
5–<10 years	19	38.0
≥10 years	10	20.0
Previous training in crisis de-escalation		
Yes	13	26.0
No	37	74.0

whereas males represented 24.0%. Regarding educational qualification, more than half of the nurses (56.0%) held a Bachelor of Nursing degree, while 34.0% had a nursing diploma

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and only 10.0% had a postgraduate qualification. Concerning years of nursing experience, 42.0% had 6 months–<5 years of experience, followed by 38.0% with 5–<10 years and 20.0% with ≥10 years. Notably, only **Table (2): Distribution of the studied nurses according to their knowledge regarding crisis de-escalation before and after implementation of the protocol (n=50)**

Knowledge domains	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Paired t-test	p-value
Basic concepts of psychiatric crisis	55.2 ± 12.1	78.6 ± 10.4	12.84	<0.001*
Causes and triggers of agitation/aggression	52.8 ± 13.5	76.4 ± 11.2	11.96	<0.001*
Early warning signs	49.6 ± 14.1	74.8 ± 12.0	11.37	<0.001*
Principles of de-escalation	51.4 ± 12.7	78.2 ± 10.1	13.25	<0.001*
Therapeutic communication	57.0 ± 13.2	81.6 ± 9.4	11.82	<0.001*

Table (2) demonstrates a marked improvement in nurses' knowledge across all domains following implementation of the administratively supported crisis de-escalation protocol. The mean total knowledge score increased from 53.2 ± 8.4 before the intervention to 72.9 ± 9.0 after the intervention, with a highly statistically significant difference (paired t=23.77, p<0.001). The greatest post-

26.0% of nurses reported previous training in crisis de-escalation, whereas nearly three quarters (74.0%) had not received previous training.

Knowledge domains	Pre-intervention Mean ± SD	Post-intervention Mean ± SD	Paired t-test	p-value
Verbal de-escalation techniques	50.8 ± 14.0	76.8 ± 10.7	12.61	<0.001*
Non-verbal de-escalation	48.2 ± 13.6	73.4 ± 11.8	11.44	<0.001*
Safety and prevention of aggression	54.6 ± 12.5	82.0 ± 9.3	13.91	<0.001*
Restrictive interventions	56.4 ± 11.8	79.2 ± 10.5	11.73	<0.001*
Post-crisis care and documentation	53.0 ± 13.1	80.6 ± 9.8	12.98	<0.001*
Total knowledge score	53.2 ± 8.4	72.9 ± 9.0	23.77	<0.001*

*Highly statistically significant.

intervention knowledge was observed in safety and prevention of aggression (82.0 ± 9.3), followed by therapeutic communication (81.6 ± 9.4) and post-crisis care and documentation (80.6 ± 9.8). Before the intervention, relatively lower knowledge scores were observed regarding non-verbal de-escalation and early warning signs.

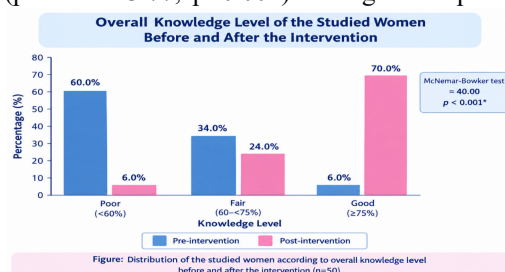


Figure 1: Before implementation of the protocol, the majority of nurses (60.0%) had poor knowledge, while only 6.0% demonstrated good knowledge. Following the intervention, the proportion of nurses with poor knowledge decreased markedly to 6.0%, whereas those with good knowledge increased substantially from 6.0% to 70.0%. The proportion with fair knowledge also changed

Figure (1): Distribution of the studied nurses according to their overall knowledge level regarding crisis de-escalation before and after intervention (n=50)

from 34.0% to 24.0%. The highly significant McNemar-Bowker test (p<0.001) confirms that the distribution of nurses' knowledge levels changed significantly after implementation of the protocol. Overall, the findings demonstrate a substantial shift from inadequate knowledge toward good knowledge following the educational and practical components of the intervention.

Table (3): Distribution of the studied nurses according to their clinical performance in crisis de-escalation before and after intervention (n=50)

Clinical performance domains	Pre-intervention Satisfactory No. (%)	Post-intervention Satisfactory No. (%)	McNemar test	p-value
Initial assessment and recognition of crisis	17 (34.0)	43 (86.0)	24.04	<0.001*
Safety measures and environmental management	15 (30.0)	45 (90.0)	28.03	<0.001*
Therapeutic communication	19 (38.0)	46 (92.0)	25.04	<0.001*

Table (3) shows a pronounced improvement in nurses' satisfactory clinical performance across all observed domains following implementation of the protocol. Before the intervention, satisfactory performance was relatively low, ranging from 26.0% for management of escalating aggression to 38.0% for therapeutic communication. After implementation, satisfactory performance

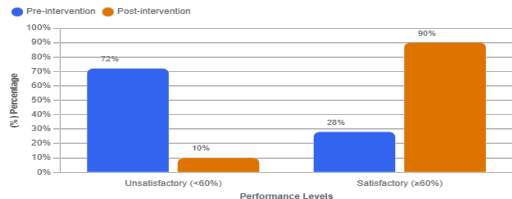


Figure (2) illustrates a substantial improvement in the overall clinical performance of the studied nurses. Before implementation, nearly three quarters of nurses (72.0%) demonstrated unsatisfactory performance, while only 28.0% achieved a

Table (4): Comparison of the mean total clinical performance scores of the studied nurses before and after intervention (n=50)

Clinical performance	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired t-test	p-value
Total	51.7 $\pm$ 9.5	73.1 $\pm$ 9.5	24.8	<0.001

Clinical performance domains	Pre-intervention Satisfactory No. (%)	Post-intervention Satisfactory No. (%)	McNemar test	p-value
Verbal de-escalation techniques	14 (28.0)	44 (88.0)	28.03	<0.001*
Non-verbal de-escalation techniques	16 (32.0)	45 (90.0)	27.03	<0.001*
Management of escalating aggression	13 (26.0)	43 (86.0)	28.03	<0.001*
Post-crisis care and documentation	15 (30.0)	47 (94.0)	30.03	<0.001*

*Highly statistically significant.

increased substantially across all domains, ranging from 86.0% to 94.0%. The highest post-intervention performance was observed in post-crisis care and documentation (94.0%), followed by therapeutic communication (92.0%) and safety and environmental management/non-verbal de-escalation (90.0% each). All observed improvements were highly statistically significant ($p < 0.001$).

Figure (2): Distribution of the studied nurses according to their overall clinical performance level before and after intervention (n=50)

satisfactory level. After implementation of the protocol, satisfactory performance increased to 90.0%, while unsatisfactory performance decreased to only 10.0%. The difference was highly statistically significant (McNemar test=29.03, $p < 0.001$).

Clinical performance	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired t-test	p-value
Performance score		10.7	1	1*

*Highly statistically significant.

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Table (4) reveals a significant improvement in the nurses' total clinical performance score after implementation of the protocol. The mean performance score increased from $51.7 \pm$

Table (5): Distribution of the studied psychiatric patients according to their sociodemographic and clinical characteristics (n=50)

Characteristics	No.	%
Age (years)		
18–<30	14	28.0
30–<40	16	32.0
40–<50	11	22.0
≥50	9	18.0
Mean $\pm$ SD	36.8 $\pm$ 10.7	
Sex		

Table (5) indicates that 32.0% of the studied psychiatric patients were aged 30–<40 years, followed by 28.0% aged 18–<30 years. The mean age was 36.8 ± 10.7 years. Males represented 58.0% of the sample, while females accounted for 42.0%. Regarding psychiatric diagnosis, schizophrenia spectrum disorders were the most frequently represented diagnosis (38.0%), followed by bipolar disorder (28.0%) and acute psychotic disorders (18.0%). More than half of the patients (56.0%) presented with severe agitation, while 30.0% demonstrated aggressive behavior.

Behavioral outcome	Pre-intervention No. (%)	Post-intervention No. (%)	McNemar test	p-value
Severe agitation present	38 (76.0)	12 (24.0)	22.09	<0.001*
Verbal aggression present	34 (68.0)	10 (20.0)	20.05	<0.001*
Physical	27 (54.0)	7 (14.0)	16.06	<0.001*

Table (6) demonstrates substantial improvement in the behavioral condition of psychiatric patients after implementation of the crisis de-escalation protocol. Severe agitation decreased from 76.0% before intervention to 24.0% after intervention. Verbal aggression decreased from 68.0% before intervention to 20.0% after intervention. Physical aggression declined from 54.0% before intervention to 14.0% after intervention. All differences were highly statistically significant ($p < 0.001$).

9.5 before intervention to 73.1 ± 10.7 after intervention. The paired t-test demonstrated a highly statistically significant improvement ($t=24.81$, $p < 0.001$).

Characteristics	No.	%
Male	29	58.0
Female	21	42.0
Psychiatric diagnosis		
Schizophrenia spectrum disorder	19	38.0
Bipolar disorder	14	28.0
Acute psychotic disorder	9	18.0
Other psychiatric disorders	8	16.0
Main behavioral presentation		
Severe agitation	28	56.0
Aggressive behavior	15	30.0
Severe psychological distress/behavioral dysregulation	7	14.0

disorders were the most frequently represented diagnosis (38.0%), followed by bipolar disorder (28.0%) and acute psychotic disorders (18.0%). More than half of the patients (56.0%) presented with severe agitation, while 30.0% demonstrated aggressive behavior.

Behavioral outcome	Pre-intervention No. (%)	Post-intervention No. (%)	McNemar test	p-value
aggression present				1*
Threatening behavior present	30 (60.0)	8 (16.0)	18.05	<0.001*
Destructive behavior present	24 (48.0)	6 (12.0)	16.06	<0.001*

*Highly statistically significant.

decreased from 68.0% to 20.0%, while physical aggression declined from 54.0% to 14.0%. Threatening behavior decreased from 60.0% to 16.0%, and destructive behavior declined from 48.0% to 12.0%. All differences were highly statistically significant ($p < 0.001$).

Patient outcome	Pre-intervention No. (%)	Post-intervention No. (%)	McNemar test	p-value
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Effectiveness of an Administratively Supported Crisis De-escalation Protocol on Emergency Nurses' Clinical Performance and Clinical Outcomes among Psychiatric Patients Admitted to Intensive Care Units

Patient outcome	Pre-intervention No. (%)	Post-intervention No. (%)	McNemar test	p-value
Cooperation with nursing care				
Not achieved	17 (34.0)	5 (10.0)	18.40 **	<0.001*
Partially achieved	27 (54.0)	17 (34.0)		
Fully achieved	6 (12.0)	28 (56.0)		
Appropriate response to				

Table (7) shows a clear improvement in patients' cooperation and response to nursing communication following implementation of the protocol. The proportion of patients for whom cooperation was not achieved decreased from 34.0% before intervention to 10.0% after intervention, while full cooperation increased from 12.0% to 56.0%. Similarly, patients

Table (8): Distribution of the studied psychiatric patients according to emergency assistance, restrictive interventions, and behavioral stabilization before and after intervention (n=50)

Clinical/behavioral outcome	Pre-intervention No. (%)	Post-intervention No. (%)	McNemar test	p-value
Need for emergency assistance	32 (64.0)	11 (22.0)	21.02	<0.001*

Table (8) demonstrates a favorable change in important clinical and behavioral outcomes following implementation of the protocol. The proportion of patients requiring emergency assistance decreased from 64.0% before intervention to 22.0% after intervention.

Table (9): Comparison of psychiatric patients' total adverse behavioral outcome scores before and after intervention (n=50)

Outcome score	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired t-test	p-value
Agitation/aggression score	5.8 $\pm$ 1.7	2.1 $\pm$ 1.3	15.42	<0.001*

Patient outcome	Pre-intervention No. (%)	Post-intervention No. (%)	McNemar test	p-value
communication/instructions				
Not achieved	20 (40.0)	6 (12.0)	20.11 **	<0.001*
Partially achieved	23 (46.0)	16 (32.0)		
Fully achieved	7 (14.0)	28 (56.0)		

*Highly statistically significant.

demonstrating a fully appropriate response to communication and instructions increased from 14.0% to 56.0%, whereas the proportion with no appropriate response decreased from 40.0% to 12.0%. The McNemar-Bowker tests showed highly statistically significant changes in both outcomes ($p < 0.001$).

Clinical/behavioral outcome	Pre-intervention No. (%)	Post-intervention No. (%)	McNemar test	p-value
Need for restrictive intervention	29 (58.0)	9 (18.0)	20.05	<0.001*
Behavioral stabilization achieved	14 (28.0)	40 (80.0)	24.04	<0.001*

*Highly statistically significant.

Similarly, the need for restrictive interventions declined from 58.0% to 18.0%. In contrast, behavioral stabilization increased markedly from 28.0% before intervention to 80.0% after intervention. All observed differences were highly statistically significant ($p < 0.001$).

Outcome score	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired t-test	p-value
Threatening/destructive behavior score	3.4 $\pm$ 1.2	1.2 $\pm$ 0.9	11.68	<0.001*
Emergency assistance/restrictive intervention	2.1 $\pm$ 0.8	0.7 $\pm$ 0.6	10.31	<0.001*

Effectiveness of an Administratively Supported Crisis De-escalation Protocol on Emergency Nurses' Clinical Performance and Clinical Outcomes among Psychiatric Patients Admitted to Intensive Care Units

Outcome score	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired t-test	p-value
score				
Total adverse behavioral	11.3 $\pm$ 2.8	4.0 $\pm$ 1.9	18.76	<0.001*

Table (9) shows a marked reduction in the mean adverse behavioral outcome scores after implementation of the protocol. The total adverse behavioral score decreased from 11.3

Table (10): Comparison of positive behavioral stabilization scores among the studied psychiatric patients before and after intervention (n=50)

Positive outcome	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired t-test	p-value
Cooperation with nursing care	0.78 $\pm$ 0.61	1.46 $\pm$ 0.63	8.12	<0.001*
Response to communication/instructions	0.74 $\pm$ 0.62	1.48 $\pm$ 0.64	8.45	<0.001*

Table (10) demonstrates a significant improvement in all positive behavioral outcomes following implementation of the crisis de-escalation protocol. The mean total

Table (11): Correlation between nurses' post-intervention clinical performance and psychiatric patients' post-intervention clinical and behavioral outcomes (n=50)

Variables	r-value	P-value
Nurses' total clinical performance vs. total positive patient outcome score	0.58	<0.001*
Nurses' total clinical performance vs. cooperation with nursing care	0.51	<0.001*
Nurses' total clinical performance vs. response to	0.55	<0.001*

Table (11) demonstrates statistically significant relationships between nurses' clinical performance and patients' clinical and behavioral outcomes after implementation of the protocol. Nurses' total clinical performance showed a positive correlation with the total positive patient outcome score ($r=0.58$, $p<0.001$), cooperation with nursing care

Outcome score	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired t-test	p-value
outcome score				

*Highly statistically significant.

± 2.8 before intervention to 4.0 ± 1.9 after intervention, with a highly statistically significant difference ($t=18.76$, $p<0.001$).

Positive outcome	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Paired t-test	p-value
Behavioral stabilization	0.66 $\pm$ 0.60	1.52 $\pm$ 0.59	9.34	<0.001*
Total positive outcome score	2.18 $\pm$ 1.14	4.46 $\pm$ 1.21	10.21	<0.001*

*Highly statistically significant.

positive outcome score increased from 2.18 ± 1.14 before intervention to 4.46 ± 1.21 after intervention ($t=10.21$, $p<0.001$).

Variables	r-value	P-value
communication		
Nurses' total clinical performance vs. behavioral stabilization	0.60	<0.001*
Nurses' total clinical performance vs. adverse behavioral outcome score	-0.56	<0.001*
Nurses' total clinical performance vs. restrictive intervention score	-0.48	0.001*

*Statistically/highly statistically significant.

($r=0.51$, $p<0.001$), response to communication ($r=0.55$, $p<0.001$), and behavioral stabilization ($r=0.60$, $p<0.001$). In contrast, nurses' clinical performance demonstrated a negative correlation with adverse behavioral outcomes ($r=-0.56$, $p<0.001$) and restrictive intervention scores ($r=-0.48$, $p=0.001$).

Discussion:

Intensive care units (ICUs) represent highly specialized clinical environments designed to provide continuous monitoring, advanced therapeutic interventions, and comprehensive nursing care for critically ill patients whose conditions require close physiological and behavioral observation. The complexity of intensive care practice is associated with rapid changes in patients' clinical status, high treatment intensity, multiple invasive procedures, environmental stressors, and the need for prompt clinical decision-making. Within this demanding environment, psychiatric patients admitted to intensive care may present additional challenges, particularly when acute agitation, aggression, behavioral dysregulation, severe anxiety, psychotic symptoms, or psychological distress interfere with treatment, communication, and patient safety. Such crises may increase the risk of self-harm, treatment interruption, accidental removal of therapeutic devices, aggression toward healthcare providers, and disruption of the intensive care environment. Consequently, critical care nurses play a central role in early recognition of behavioral deterioration, continuous assessment, therapeutic communication, rapid implementation of appropriate interventions, and coordination with the multidisciplinary team to maintain both physiological stability and psychological safety (SCCM, 2025).

The present study showed that nearly half of the nurses were aged 30–<40 years, with a mean age of 34.1 ± 7.2 years; more than three quarters were females, more than half held a Bachelor's degree, and less than half had 6 months–<5 years of experience. Notably, only more than one quarter had previous crisis de-escalation training, while less than three quarters had not. This finding agrees with **Mitchell et al. (2024)**, who reported inadequate preparation for aggression management among acute-care staff and emphasized training as an important strategy for improving knowledge and confidence. Similarly, **Almulla et al. (2026)** highlighted the importance of de-escalation training for emergency nurses frequently exposed to behavioral emergencies. Differences in age, sex, education, and experience distributions may reflect variations in workforce composition and institutional settings. The high proportion without previous training in the present study supports the need for structured competency-based education.

The present study demonstrated significant improvement in all knowledge domains, with the total knowledge score increasing. The greatest post-intervention scores were observed in safety and prevention of aggression, therapeutic communication, and post-crisis care. This finding agrees with **Mitchell et al. (2024)**, who found that simulation-based aggression-management education improved knowledge and confidence among acute-care staff. **Duncan et al. (2024)** similarly reported improved knowledge and confidence following simulation-based verbal de-escalation training in an emergency department. The improvement may be attributed to the combination of theoretical teaching, demonstration, simulation, feedback, and repeated reinforcement. However, previous reviews have reported heterogeneity in educational interventions and noted that knowledge gains do not always translate directly into clinical practice (**Kynoch et al., 2024**), supporting the need to combine education with practical training as in the present study.

Before intervention, 60.0% of nurses had poor knowledge and only 6.0% had good knowledge. After intervention, poor knowledge decreased to 6.0%, while good knowledge increased to 70.0% (McNemar-Bowker=40.00, $p<0.001$). This substantial shift agrees with **Duncan et al. (2024)** and **Olowo et al. (2025)**, who reported improved knowledge following simulation-based de-escalation education. However, **Ghods Astan et al. (2022)** found variability among educational approaches and insufficient evidence to identify one universally superior method. The marked improvement in the present study may therefore be related to integrating theoretical education with simulation, feedback, and administrative support.

The present study showed marked improvement in satisfactory performance across all domains, including initial crisis recognition, therapeutic communication, verbal de-escalation, and post-crisis care. These findings agree with **Eltrass et al. (2026)**, who reported improvement in performance-related outcomes following simulation-based aggression-management education. They are also consistent with evidence that scenario-based simulation strengthens nursing clinical skills (**Saragih et al., 2024**). However, **Kynoch et al. (2024)** reported heterogeneous findings across interventions, possibly because of differences in duration, content, assessment methods, and implementation. The stronger

improvement in the present study may reflect the combination of simulation, supervised practice, feedback, and administrative facilitation.

Overall satisfactory performance increased, while unsatisfactory performance decreased. The mean total performance score also increased. These findings agree with **Altinbas et al. (2025)**, who demonstrated that simulation-based education can improve clinical skills. However, evidence regarding the translation of improved performance into patient outcomes remains less consistent (Mitchell et al., 2024). The present findings may therefore be related to the protocol's combination of practical training, direct observation, and administrative support.

The studied patients had a mean age of 36.8 ± 10.7 years; males represented more than half of them, schizophrenia spectrum disorders were the most common diagnosis, and severe agitation was the most frequent behavioral presentation. These characteristics are consistent with the clinical importance of agitation and behavioral dysregulation in acute psychiatric and critical-care environments. Current critical-care guidance identifies agitation as an important condition requiring systematic assessment and management in critically ill adults (**Lewis et al., 2025**). Differences in diagnosis and behavioral presentation across studies may result from variations in referral patterns, admission criteria, and clinical settings.

The present study demonstrated significant reductions in severe agitation, verbal aggression, physical aggression, threatening behavior, and destructive behavior. These findings agree with recent evidence supporting multicomponent and non-restrictive approaches to aggression management and with **Almulla et al. (2026)**, who reported that de-escalation training may reduce the frequency and severity of aggression. However, **Gaynes et al. (2017)** and more recent reviews have indicated that evidence for reductions in violent incidents is variable (**Bulut & Yildirim, 2026**). This difference may be explained by the present protocol's combination of early recognition, therapeutic communication, environmental management, simulation, and administrative support rather than training alone.

Full cooperation with nursing care increased, while patients with no cooperation decreased.

Similarly, full appropriate response to communication increased with both outcomes. These findings agree with **Ho et al. (2026)**, who emphasized communication, empathy, and patient engagement as important outcomes of effective de-escalation. However, **Abd El-Gawad & Hassan, 2026** have focused more heavily on staff knowledge and confidence than direct patient responses, limiting direct comparison. The improvement in the present study may therefore reflect the protocol's emphasis on therapeutic communication and non-threatening interaction.

The need for emergency assistance decreased, restrictive interventions, while behavioral stabilization increased. These findings agree with **Daguman et al. (2024)**, who reported that multicomponent approaches may reduce aggression, conflict, and restrictive practices, and with **Gaynes et al. (2017)**, who found some evidence supporting multimodal interventions. However, the literature remains inconsistent regarding the effect of staff training alone on restrictive practices. The greater improvement in the present study may be related to combining nurse training with environmental management and administrative support.

The total adverse behavioral outcome score decreased significantly with similar reductions in agitation/aggression, threatening/destructive behavior, and emergency assistance/restrictive intervention scores. This finding agrees with **Daguman et al. (2024)** and recent evidence supporting multicomponent aggression-management strategies. However, **Mitchell et al. (2024)** noted that although staff outcomes frequently improve after training, direct patient outcomes are less consistently demonstrated. The marked reduction in the present study may therefore reflect the combined effect of competency development, practical application, environmental control, and administrative facilitation.

The total positive outcome score increased, with improvements in cooperation, response to communication, and behavioral stabilization. This finding agrees with **Almulla et al. (2026)**, who emphasized communication, empathy, and patient engagement as important components of effective de-escalation. It is also consistent with **Daguman et al. (2024)**, who supported relational and multicomponent approaches to managing aggression. However, positive patient outcomes are less frequently assessed than staff-related outcomes in previous studies, limiting direct comparison.

The present findings therefore suggest that de-escalation may be associated with both reduction of adverse behavior and enhancement of therapeutic engagement.

Nurses' clinical performance was positively correlated with total positive patient outcomes, cooperation, response to communication, and behavioral stabilization, while negative correlations were found with adverse behavioral outcomes and restrictive intervention scores, all statistically significant. These findings agree with **Yilmaz et al. (2025)** who emphasized the importance of staff competencies, communication, and organizational factors in successful de-escalation. However, the correlations do not establish causality because patient severity, staffing, environment, and other concurrent interventions may influence outcomes. Thus, the findings indicate an important association between higher-quality nursing performance and more favorable patient responses rather than proving a direct causal relationship.

Overall, the four hypotheses were supported. Nurses' knowledge and clinical performance improved significantly, while psychiatric patients showed reduced agitation, aggression, threatening behavior, emergency assistance, and restrictive interventions, together with improved cooperation, communication, and behavioral stabilization. Significant correlations between nurses' performance and patient outcomes further supported an association between nursing competency and patient response. These findings are broadly consistent with recent evidence that de-escalation training improves nurses' knowledge, confidence, and clinical practice, although patient-level outcomes are more variable (**Mitchell et al., 2024; Almulla et al., 2026**). The favorable findings in the present study may be related to the integrated nature of the protocol, combining education, simulation, supervised practice, environmental management, and administrative support rather than relying on training alone.

Conclusion

Based on the findings of the present study, the present study concluded that the administratively supported crisis de-escalation protocol significantly improved emergency nurses' knowledge and clinical performance in managing psychiatric crises in intensive care units. Significant improvements were also observed in psychiatric patients' outcomes,

including reduced agitation, aggression, threatening and destructive behaviors, emergency assistance, and restrictive interventions, together with improved cooperation, communication, and behavioral stabilization. Moreover, higher nurses' performance was significantly associated with better patient outcomes and fewer adverse behavioral outcomes. Overall, the findings supported all study hypotheses and demonstrated the effectiveness of the protocol in strengthening nurses' crisis-management competencies and promoting favorable patient outcomes.

Recommendations

Based on the findings of the present study, the following recommendations are suggested:

- Implementing standardized crisis de-escalation protocols in intensive care and emergency units.
- Providing regular training on early recognition, therapeutic communication, verbal and non-verbal de-escalation, and aggression management.
- Using simulation and supervised practice to strengthen nurses' practical crisis-management skills.
- Strengthening administrative support through adequate staffing, safety measures, clear protocols, and rapid access to assistance.
- Promoting early behavioral assessment and non-restrictive interventions whenever clinically appropriate.
- Conducting periodic competency assessments and refresher training for nurses.
- Providing post-crisis debriefing and accurate documentation after behavioral emergencies.
- Conducting further studies using larger samples, comparison groups, and longer follow-up periods.

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