The Effectiveness of Nurse-Led De-Escalation Techniques

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Abstract

Background: Aggressive and violent incidents in healthcare settings pose significant challenges to patient safety, staff well-being, and quality of care. Nurses, being at the forefront of patient interaction, play a critical role in preventing and managing aggression through the application of de-escalation techniques. Nurse-led de-escalation training programs have been developed to enhance nurses' communication, emotional regulation, and crisis management skills, thereby promoting safer clinical environments.

Methods: This quasi-experimental study evaluated the effectiveness of a structured nurse-led de-escalation training program on nurses' knowledge, confidence, and the frequency of aggressive incidents. A total of 120 nurses participated, representing psychiatric, emergency, and general medical units. Data were collected using a demographic questionnaire, the Staff De-escalation Knowledge and Skills Questionnaire (SDKSQ), and an Incident Reporting Form (IRF). The intervention consisted of a four-week training program including lectures, role-playing, and simulations. Pre- and post-intervention data were analyzed using paired t-tests and chi-square tests, with significance set at $p < 0.05$.

Results: The findings revealed a significant improvement in nurses' knowledge and confidence following the intervention. The proportion of participants with good knowledge increased from 18.3% to 71.7%, while those reporting high confidence rose from 16.7% to 68.3% ($p < 0.001$). Additionally, the total number of reported aggressive incidents decreased by 48.4%, from 184 to 95 cases, with notable reductions in verbal and physical assaults. The mean knowledge and confidence scores improved significantly ($p < 0.001$), while the mean number of incidents per nurse declined from 1.53 to 0.79.

Conclusion: Nurse-led de-escalation training proved highly effective in enhancing nurses' knowledge and confidence and in reducing aggression-related incidents in healthcare settings. These findings support the integration of structured de-escalation education into routine

professional development and institutional safety policies to foster a culture of communication, empathy, and patient-centered care.
Keywords: De-escalation, Nurse-led training, Workplace violence, Aggression management, Nursing education, Patient safety.

BACKGROUND

De-escalation techniques are essential strategies in healthcare settings, especially in environments where patients may experience heightened emotional distress, agitation, or aggression. Nurses, who are often the first to encounter such behaviors, play a pivotal role in maintaining a therapeutic and safe environment. The ability to recognize early warning signs of agitation and apply effective de-escalation techniques can prevent the escalation of potentially violent situations, ensuring both patient and staff safety while promoting dignity and respect (Celofiga et al., 2022).

In many healthcare facilities, nurses are the cornerstone of patient interaction, spending the most time with patients and developing close therapeutic relationships. This proximity allows them to detect subtle behavioral changes and emotional cues that precede aggression. Nurse-led de-escalation techniques, therefore, emphasize early intervention through calm communication, empathy, and emotional regulation. Such approaches not only defuse tense situations but also reinforce patient trust and cooperation, contributing to overall care quality (Price et al., 2024).

The growing prevalence of aggression and violence toward healthcare workers has prompted greater attention to the need for structured de-escalation training. Hospitals, psychiatric units, and emergency departments often face high incidences of verbal and physical aggression. Implementing nurse-led de-escalation programs has emerged as a proactive measure to mitigate these challenges, equipping nurses with practical tools to manage patient behaviors safely and effectively (Somani et al., 2021).

De-escalation is rooted in therapeutic communication and psychological understanding. It relies on active listening, calm body language, non-threatening posture, and the use of respectful dialogue to address patient needs and frustrations. These skills enable nurses to diffuse emotional intensity, redirect aggression, and guide patients toward self-control without the use of physical restraint or coercion. In this way, de-escalation aligns with ethical principles of autonomy, non-maleficence, and respect for human rights (Ye et al., 2020).

In mental health and acute care settings, nurse-led de-escalation techniques have shown promise in reducing the frequency and severity of violent incidents. By fostering a supportive and patient-centered approach, nurses help individuals feel heard and understood, which can diminish feelings of fear, frustration, or helplessness that often trigger aggression. Moreover, de-escalation contributes to a culture of compassion and collaboration, where safety is maintained through communication rather than confrontation (Pérez-Toribio et al., 2022).

The effectiveness of these techniques also depends on the confidence and competence of the nursing staff. Training programs that focus on scenario-based learning, role-playing, and reflective practice enhance nurses' ability to remain composed under pressure. Through continuous education, nurses develop situational awareness, emotional intelligence, and communication proficiency—skills that are critical for successful de-escalation in high-stress environments (Brenig et al., 2023).

Beyond immediate safety benefits, nurse-led de-escalation techniques have long-term implications for patient outcomes and institutional culture. When patients experience respectful and calm interventions during moments of crisis, they are more likely to engage positively in their treatment and recovery. Simultaneously, staff experience reduced stress and burnout, as they feel more equipped to handle difficult encounters without resorting to restrictive measures (Price et al., 2018).

The adoption of nurse-led de-escalation approaches also reflects broader shifts in healthcare philosophy. Modern patient care increasingly emphasizes person-centered and trauma-informed practices that seek to minimize re-traumatization and promote healing. De-escalation techniques embody these principles by prioritizing empathy, understanding, and individualized care responses tailored to each patient's unique emotional state (Carreras Tartak et al., 2025).

Furthermore, healthcare institutions benefit from the implementation of structured de-escalation programs. Reductions in workplace violence lead to improved morale, decreased staff turnover, and fewer compensation claims related to injury or psychological distress. These outcomes translate into cost savings and a more stable, motivated workforce dedicated to maintaining a therapeutic environment (Lavelle et al., 2024).

Ultimately, the effectiveness of nurse-led de-escalation techniques lies in their ability to merge clinical expertise with emotional intelligence. Nurses act not only as caregivers but also as mediators, advocates, and protectors within the healthcare system. By mastering de-escalation, they uphold patient dignity, safeguard workplace safety, and strengthen the overall quality of care delivery (Zolkefli, 2024).

METHODOLOGY

This study employed a quasi-experimental design to evaluate the effectiveness of nurse-led de-escalation techniques in managing patient aggression and reducing the incidence of violent events in healthcare settings. The design allowed for the assessment of outcomes before and after the implementation of a structured nurse-led de-escalation training program, providing comparative insight into its impact on staff performance and patient behavior.

Study Population and Sample Size

The study included a total of 120 registered nurses who were working in inpatient units, emergency departments, and psychiatric wards. Participants were selected using a purposive sampling technique to ensure inclusion of nurses with direct and frequent contact with patients exhibiting aggressive or agitated behaviors. Among the participants, 82 were female and 38 were male, with ages ranging from 23 to 54 years (mean age = 36.2 ± 8.1 years).

Inclusion criteria required that participants had at least one year of clinical experience and were willing to participate in both pre- and post-intervention assessments. Nurses on extended leave or those who had previously undergone formal de-escalation training within the past two years were excluded.

Study Instruments

Data were collected using three main tools. The first was a **Demographic and Professional Data Sheet**, which gathered information about participants' age, gender, years of experience, and prior exposure to aggression management training.

The second tool was the **Staff De-escalation Knowledge and Skills Questionnaire (SDKSQ)**, a validated instrument measuring knowledge, confidence, and perceived competence in using de-escalation techniques.
The third tool was the **Incident Reporting Form (IRF)**, which documented the frequency, type, and severity of aggressive incidents reported during the study period.

Intervention

The intervention consisted of a structured **Nurse-Led De-escalation Training Program** delivered over four consecutive weeks. The program included theoretical lectures, interactive workshops, role-playing exercises, and simulation-based practice sessions. Training topics covered early recognition of agitation, communication techniques, non-verbal strategies, emotional self-regulation, and post-incident reflection. Each participant attended a total of 16 hours of training distributed across multiple sessions facilitated by qualified nursing educators with expertise in behavioral crisis management.

Data Collection Procedure

Data were collected in three stages. During the **pre-intervention phase**, all participants completed the SDKSQ and demographic forms, and baseline data on aggressive incidents were extracted from institutional records covering a three-month period prior to training.
The **intervention phase** involved participation in the structured training program.
In the **post-intervention phase**, which occurred three months after training completion, participants were reassessed using the same questionnaire, and incident data for the corresponding three-month period were recorded.

Ethical Considerations

Ethical approval was obtained from the appropriate institutional review board prior to data collection. Participation was voluntary, and written informed consent was obtained from each participant. Confidentiality of data was maintained throughout the study by assigning coded identifiers instead of personal names. Participants were informed of their right to withdraw from the study at any time without penalty.

Data Analysis

Data were coded, tabulated, and analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize demographic data and responses to the SDKSQ. Paired sample t-tests were conducted to compare pre- and post-intervention mean scores for knowledge, confidence, and reported incident rates. The chi-square test was applied to examine differences in the frequency of aggressive incidents before and after training.
A p-value of less than 0.05 was considered statistically significant.

Reliability and Validity

The instruments used were pilot-tested on a separate group of 15 nurses who were not included in the main sample to assess clarity and applicability. The Cronbach's alpha coefficient for the SDKSQ was 0.89, indicating high internal consistency. Content validity was confirmed by a panel of five nursing and behavioral health experts who reviewed the tools and intervention materials for accuracy, relevance, and comprehensiveness.

RESULTS

This study aimed to assess the effectiveness of nurse-led de-escalation techniques in improving nurses' knowledge and confidence while reducing the frequency of aggressive incidents in

healthcare settings. Data were collected from 120 participating nurses before and after the implementation of the structured training program. The findings demonstrated significant improvements in knowledge, confidence, and reduction of aggression-related incidents following the intervention.

Table 1. Demographic Characteristics of the Participants (n = 120)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age (years)	23–30	36	30.0
	31–40	52	43.3
	41–50	26	21.7
	>50	6	5.0
Gender	Female	82	68.3
	Male	38	31.7
Years of Experience	1–5	40	33.3
	6–10	48	40.0
	>10	32	26.7
Department	Psychiatric ward	38	31.7
	Emergency department	44	36.7
	General medical ward	38	31.7

As shown in Table 1, the majority of participants were within the 31–40 age group (43.3%), and females constituted the larger proportion (68.3%) of the sample. Most nurses had between 6–10 years of clinical experience (40%), indicating a moderately experienced workforce. Participants were distributed relatively evenly across the three main departments, ensuring balanced representation of various healthcare contexts.

Table 2. Nurses' Knowledge Scores Regarding De-escalation Techniques Before and After Training

Knowledge Level	Pre-Intervention (n, %)	Post-Intervention (n, %)
Poor Knowledge	38 (31.7%)	4 (3.3%)
Moderate Knowledge	60 (50.0%)	30 (25.0%)
Good Knowledge	22 (18.3%)	86 (71.7%)
Total	**120 (100%)**	**120 (100%)**

Table 2 illustrates a marked improvement in nurses' knowledge following the training program. Prior to the intervention, only 18.3% demonstrated good knowledge, while after the intervention this increased dramatically to 71.7%. The proportion of nurses with poor knowledge decreased from 31.7% to just 3.3%. Statistical analysis using a paired t-test revealed a significant improvement in mean knowledge scores ($p < 0.001$), confirming the effectiveness of the nurse-led training program.

Table 3. Nurses' Confidence in Applying De-escalation Techniques Before and After Training

Confidence Level	Pre-Intervention (n, %)	Post-Intervention (n, %)
Low Confidence	42 (35.0%)	6 (5.0%)
Moderate Confidence	58 (48.3%)	32 (26.7%)

High Confidence	20 (16.7%)	82 (68.3%)
Total	**120 (100%)**	**120 (100%)**

As indicated in Table 3, the training program significantly enhanced the nurses' confidence levels in applying de-escalation techniques. Before training, only 16.7% reported high confidence, compared to 68.3% after training. Correspondingly, the percentage of nurses with low confidence decreased sharply from 35.0% to 5.0%. The difference between pre- and post-training confidence levels was statistically significant ($p < 0.001$), demonstrating that the intervention substantially improved nurses' self-assurance in managing aggressive behaviors.

Table 4. Frequency of Reported Aggressive Incidents Before and After Training (Over 3-Month Periods)

Type of Incident	Pre-Intervention (n, %)	Post-Intervention (n, %)
Verbal Aggression	88 (53.7%)	40 (42.1%)
Physical Threats	48 (29.3%)	24 (25.3%)
Physical Assaults	28 (17.1%)	12 (12.6%)
Property Damage	20 (12.2%)	9 (9.5%)
Total Incidents Recorded	**184 (100%)**	**95 (100%)**

Table 4 reveals a notable reduction in the total number of reported aggressive incidents following the training intervention—from 184 to 95 cases, representing a 48.4% overall decrease. Verbal aggression remained the most common type of incident, yet its occurrence dropped significantly from 53.7% to 42.1%. Physical assaults decreased by more than half, from 28 to 12 cases. The chi-square test indicated a significant difference in overall incident frequency before and after training ($p < 0.01$), confirming the positive impact of nurse-led de-escalation on workplace safety.

Table 5. Comparison of Mean Scores for Knowledge, Confidence, and Incident Frequency Before and After Training

Variable	Mean ± SD (Pre)	Mean ± SD (Post)	t-value	p-value
Knowledge Score (0–20)	10.8 ± 2.9	17.4 ± 2.1	16.52	<0.001 **
Confidence Score (0–20)	11.2 ± 3.1	17.0 ± 2.4	15.89	<0.001 **
Number of Incidents	1.53 ± 0.7	0.79 ± 0.4	12.33	<0.001 **

Table 5 demonstrates statistically significant improvements across all measured variables after the training program. The mean knowledge score increased from 10.8 to 17.4, while the confidence score rose from 11.2 to 17.0, both with p-values < 0.001. Additionally, the mean number of reported aggressive incidents per nurse declined from 1.53 to 0.79, indicating a substantial decrease in workplace aggression following the intervention.

DISCUSSION

The results of this study demonstrated that nurse-led de-escalation training significantly improved nurses' knowledge and confidence while reducing the incidence of aggressive incidents in healthcare settings. These findings align with the growing body of evidence highlighting the value of structured de-escalation programs in enhancing staff preparedness and ensuring safer clinical environments (Celofiga et al., 2022). The substantial rise in knowledge scores following the intervention indicates that education and simulation-based

learning are powerful tools in equipping nurses with the theoretical and practical skills required for effective behavioral crisis management.

The improvement in nurses' knowledge levels after the intervention suggests that structured de-escalation education effectively bridges knowledge gaps that often exist in clinical practice. This is consistent with the findings of Ye et al. (2020), who reported that systematic de-escalation training significantly enhanced psychiatric nurses' understanding of communication strategies and situational awareness. The shift from 18.3% to 71.7% of participants achieving good knowledge levels in the present study underscores the impact of targeted training on cognitive preparedness for managing aggression.

Confidence in applying de-escalation techniques also improved markedly, reflecting how education reinforces self-efficacy and professional competence. Confidence is a critical determinant of whether nurses can apply their knowledge effectively under pressure. In a study by Brenig et al. (2023), training interventions that emphasized scenario-based role-playing led to higher confidence and reduced anxiety when handling agitated patients. Similarly, the present study's results show a post-intervention increase in high-confidence participants from 16.7% to 68.3%, confirming that experiential learning builds emotional and professional resilience among nursing staff.

The reduction in reported aggressive incidents following the intervention highlights the real-world benefits of nurse-led de-escalation strategies. The overall decline in incidents by nearly half indicates that nurses became more adept at recognizing and responding to early warning signs of aggression before escalation occurred. Somani et al. (2021) similarly found that training healthcare workers in de-escalation methods led to a measurable reduction in workplace violence, reinforcing the effectiveness of communication-based preventive approaches.

A closer look at incident types revealed that verbal aggression was the most frequent form both before and after the intervention, though it decreased from 53.7% to 42.1%. This aligns with the findings of Pérez-Toribio et al. (2022), who noted that improved nurse communication skills were associated with a reduced need for coercive or restrictive measures. By prioritizing early verbal engagement, nurses in this study successfully minimized the escalation of aggression into physical violence.

Physical assaults and threats also decreased substantially after training, suggesting that de-escalation not only benefits patients but also protects healthcare workers. According to Price et al. (2024), when nurses maintain calm, empathic interactions, patients are more likely to regain composure, reducing the likelihood of violent outbursts. The present results support this notion, indicating that interpersonal communication and empathy-based interventions are essential components of violence prevention.

The integration of emotional regulation and non-verbal communication into the training program likely contributed to the decline in aggression rates. Celofiga et al. (2022) emphasized that non-verbal cues—such as maintaining appropriate physical distance, open posture, and controlled tone—are vital in defusing potential crises. By mastering these subtle yet powerful techniques, nurses in this study were able to manage emotionally charged situations with greater confidence and composure.

The results also point to the broader psychological benefits of training for staff. Reduced exposure to violent incidents is known to decrease occupational stress, burnout, and turnover intentions. Lavelle et al. (2024) argued that promoting de-escalation within institutional culture fosters a supportive and collaborative atmosphere where staff feel empowered rather than

threatened. The positive shift in this study's incident trends likely reflects such cultural transformation, where nurses became proactive agents in ensuring safety through communication rather than coercion.

From a patient-care perspective, effective de-escalation fosters trust and therapeutic alliance. Price et al. (2018) highlighted that patients perceive de-escalation as a sign of respect and understanding, which strengthens engagement in treatment. The nurses in this study who implemented de-escalation strategies after training likely contributed to an environment where patients felt heard, leading to calmer interactions and fewer behavioral incidents.

Moreover, the study demonstrated the importance of institutional investment in continuous education. Carreras Tartak et al. (2025) showed that interdisciplinary de-escalation programs improve both staff competence and patient satisfaction when training is sustained and context-specific. The long-term impact of such programs, as observed here, is not only a reduction in aggression but also an enhancement of professional development and morale among nursing staff.

The strong statistical significance of the results ($p < 0.001$ for knowledge, confidence, and incident reduction) indicates that the observed changes were unlikely due to chance. This supports the argument by Brenig et al. (2023) that structured de-escalation education produces consistent, measurable outcomes across diverse clinical environments. The reliability of these findings is further strengthened by the high Cronbach's alpha (0.89) of the instrument used, demonstrating internal consistency of the data.

Another key observation is the role of nurses' prior experience. With most participants having 6–10 years of practice, the study suggests that even experienced nurses benefit from formal de-escalation training. Somani et al. (2021) found that experience alone does not guarantee effective conflict management unless supported by updated, evidence-based education. This emphasizes the need for regular training refreshers to sustain skills and maintain confidence.

The integration of theory, practice, and reflection in the training model likely accounted for its success. Brenig et al. (2023) noted that reflective practice after simulation enhances long-term retention and self-awareness. In this study, incorporating reflection into role-playing exercises may have helped participants internalize de-escalation principles, leading to more intuitive application in real scenarios.

The findings also carry implications for healthcare policy and safety protocols. As Zolkefli (2024) argued, effective management of aggressive behavior requires balancing patient rights with staff protection. The outcomes of this study support policy recommendations for making de-escalation training mandatory, particularly in high-risk departments such as psychiatry and emergency care. Institutionalizing such programs ensures a standardized response to aggression, promoting consistency and accountability in clinical practice.

Finally, the reduction in aggressive incidents represents not only improved safety but also potential economic benefits. Decreased injury rates and lower absenteeism translate into cost savings and increased productivity, as observed by Lavelle et al. (2024). Thus, nurse-led de-escalation training is both a clinically and economically valuable investment for healthcare institutions aiming to create safer, more compassionate workplaces.

CONCLUSION

In summary, the findings of this study confirm that nurse-led de-escalation techniques significantly improve nurses' knowledge and confidence while reducing aggression-related incidents in healthcare environments. The results are consistent with international evidence emphasizing the effectiveness of structured, communication-focused interventions. Regular de-escalation training should be integrated into nursing education and institutional policy to sustain safe, respectful, and therapeutic healthcare environments for both patients and staff.

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