Review

Emergency Psychiatric–Mental Health Nursing Interventions for Older Adults: A Systematic Review and Meta-Analysis

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ABSTRACT

Background: Older adults represent a highly vulnerable population in psychiatric emergency settings due to cognitive decline, multimorbidity, and psychosocial instability. Although psychiatric emergency nursing interventions are increasingly implemented, existing evidence remains fragmented and lacks comprehensive synthesis focusing specifically on nursing-led, non-pharmacological approaches in emergency contexts. The research aimed to evaluate the effectiveness of psychiatric emergency nursing interventions in reducing agitation, physical restraint use, and emergency pharmacotherapy among older adults, and to identify the most effective intervention components.

Methods: This review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. The protocol has been submitted to PROSPERO and is currently under review. A comprehensive search was performed in PubMed, CINAHL, PsycINFO, and Scopus for studies published between January 2013 and December 2023, with the final search conducted in December 2023. A total of 1,246 records were identified; 27 studies met the inclusion criteria and were included in the meta-analysis. Risk of bias was assessed using design-appropriate appraisal tools. Data were synthesized using a random-effects model. Statistical heterogeneity was evaluated using the I^2 statistic, and sensitivity analyses were performed to assess robustness.

Results: Psychiatric emergency nursing interventions including intensive therapeutic communication, structured de-escalation strategies, and family involvement significantly reduced agitation among older adults (pooled effect size = -0.68; 95% CI: -0.84 to -0.52; I^2 = 75%). These interventions were also associated with decreased use of physical restraints and emergency pharmacological management. Most randomized studies demonstrated low risk or some concerns, while non-randomized studies exhibited moderate risk of bias.

Conclusion: Nursing-led psychiatric emergency interventions are effective in reducing agitation and minimizing restrictive practices among older adults in emergency settings. However, substantial heterogeneity across studies limits the certainty of evidence. These findings support the development of standardized evidence-based clinical protocols and targeted geriatric psychiatric nurse training, particularly in resource-constrained emergency systems. Further high-quality randomized trials are required to strengthen the evidence base and inform policy implementation

Keywords: Elderly Mental Health; Psychiatric Emergency Nursing; Geriatric Psychiatry; De-Escalation Intervention; Therapeutic Communication.

Implications for Practice:

- In clinical practice, the integration of structured therapeutic communication, de-escalation techniques, and family involvement should be prioritized to reduce agitation and minimize the use of restrictive and pharmacological interventions among older adults in psychiatric emergency settings.
- At the health policy level, the development and implementation of standardized, evidence-based protocols that emphasize non-pharmacological, nursing-led interventions are essential to promote safer, person-centered, and ethically sound emergency psychiatric care for the aging population.
- In midwifery and broader health professional education, curricula should incorporate competency-based training in crisis communication and de-escalation strategies, with particular relevance for implementation in Low- and Middle-Income Countries (LMICs) and other resource-constrained settings where scalable, low-cost interventions are critically needed.

Introduction

Older adults represent one of the most vulnerable populations to mental health crises, particularly within psychiatric emergency settings. According to the World Health Organization, approximately 15% of the global older adult population experiences a mental health disorder, with depression and anxiety increasing in prevalence with age (Wilson & Saklofske, 2018). In emergency departments (EDs), older adults frequently present with acute psychosis, severe agitation, suicidal ideation, delirium, and dementia-related behavioral disturbances, often compounded by multimorbidity and cognitive impairment (Toot et al., 2011; Raharjo et al., 2024). These complex clinical presentations require tailored, comprehensive nursing interventions beyond routine crisis stabilization.

Cognitive decline, sensory impairment, communication barriers, and coexisting chronic medical conditions complicate the management of psychiatric emergencies in older adults (Sikka et al., 2015). In high-pressure emergency environments characterized by limited time and resources, the use of physical restraint or emergency pharmacotherapy is sometimes employed as a rapid response strategy, despite concerns regarding safety, ethical implications, and long-term outcomes (Vial, 2021). Such approaches may increase the risk of adverse events, including functional decline, prolonged hospitalization, and psychological distress.

Although research on mental health care for older adults has expanded, much of the literature emphasizes pharmacological treatment or physician-led psychiatric management (Anderson et al., 2023). Comparatively fewer studies have synthesized evidence regarding nursing-led, non-pharmacological psychiatric emergency interventions, such as therapeutic communication, structured de-escalation strategies, environmental modification, and family involvement. Existing studies often demonstrate methodological heterogeneity and inconsistent outcome reporting, limiting the translation of findings into standardized emergency nursing protocols (Downing et al., 2013; Lyons et al., 2018).

In many emergency departments, psychiatric crisis management for older adults remains non-standardized and highly dependent on individual clinical judgment (Streater et al., 2017). Moreover, previous reviews have tended to examine general psychiatric interventions across age

groups or mixed multidisciplinary models, rather than focusing specifically on psychiatric emergency nursing interventions delivered to older adults. To date, no comprehensive meta-analysis has exclusively evaluated the effectiveness of nursing-led emergency psychiatric interventions targeting agitation, physical restraint use, emergency pharmacotherapy, and psychosocial stability among older adults (Cossette et al., 2015; Shulman, 2020). Addressing this gap is particularly important given the rapid growth of aging populations worldwide, including in low- and middle-income countries (LMICs), where emergency systems often face infrastructure constraints and workforce shortages (Abudu et al., 2025). Evidence-based, scalable nursing interventions are therefore essential to support humane, safe, and efficient crisis management in diverse healthcare settings.

Accordingly, this study aimed to conduct a systematic review and meta-analysis to evaluate the effectiveness of psychiatric emergency nursing interventions for older adults. The research question was formulated using the PICO framework: (P) older adults experiencing psychiatric emergencies in emergency settings; (I) psychiatric emergency nursing interventions (e.g., therapeutic communication, de-escalation, family involvement); (C) usual care or standard emergency management; and (O) reduction in agitation, decreased use of physical restraint and emergency pharmacotherapy, and improved psychosocial stability. By synthesizing evidence from studies published between 2013 and 2023, this review seeks to identify the most effective intervention components and provide an updated, evidence-based foundation for clinical guidelines, nurse training programs, and policy development in psychiatric emergency care for older adults.

Methods

Design and Protocol Registration

This study was conducted as a systematic review and meta-analysis in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines (Page et al., 2021). The review protocol was submitted to the International Prospective Register of Systematic Reviews (PROSPERO) and is currently under review. The research question was formulated using the PICO framework, focusing on older adults (≥60 years) experiencing psychiatric emergencies in emergency settings. The intervention of interest included psychiatric emergency nursing interventions such as therapeutic communication, structured de-escalation strategies, family involvement, and environmental modification. These interventions were compared with usual care, standard emergency management, or the absence of structured nursing intervention. The primary outcomes evaluated were reduction in agitation, decreased use of physical restraint and emergency pharmacotherapy, and improvement in psychosocial stability (Borenstein et al., 2021; Ahn & Kang, 2018).

Eligibility Criteria

Studies were considered eligible if they examined psychiatric emergency nursing interventions delivered to older adults aged 60 years or older and employed randomized controlled trials (RCTs) or quasi-experimental designs. Eligible studies were required to report measurable outcomes related to agitation, use of physical restraint, emergency pharmacotherapy, or psychosocial stability. Only studies published in peer-reviewed journals between January 2013 and December 2023 were included to ensure contemporary relevance to emergency psychiatric care.

Publications were limited to English-language articles to ensure accurate interpretation of findings.

Studies were excluded if they did not specifically focus on psychiatric emergency settings, included mixed-age populations without separate analysis for older adults, lacked clearly defined outcome measures, or were conference abstracts, editorials, narrative reviews, or other non-peer-reviewed publications.

Information Sources and Search Strategy

A comprehensive literature search was conducted in four electronic databases: PubMed, CINAHL, PsycINFO, and Scopus. The final search was performed in December 2023. In addition to database searches, the reference lists of included studies were manually screened to identify additional relevant articles.

The search strategy combined Medical Subject Headings (MeSH) and free-text terms using Boolean operators. Keywords included terms related to psychiatric emergencies, nursing interventions, older adults, and non-pharmacological crisis management strategies. An example of the PubMed search string was: ("psychiatric emergency" OR "mental health crisis" OR "behavioral emergency") AND ("nursing intervention*" OR "psychiatric emergency nursing") AND ("older adults" OR elderly OR geriatric) AND ("de-escalation" OR "therapeutic communication" OR "family involvement").

Study Selection Process

All identified records were imported into reference management software, and duplicate entries were removed prior to screening. Two independent reviewers screened titles and abstracts for relevance based on predefined eligibility criteria. Full-text articles of potentially eligible studies were subsequently assessed independently by the same reviewers. Disagreements were resolved through discussion and consensus, and when necessary, consultation with a third reviewer. The study selection process, including the number of records identified, screened, excluded, and included, is presented in a PRISMA 2020 flow diagram, with reasons for exclusion documented at the full-text review stage.

Data Collection Process

A standardized and pilot-tested data extraction form was developed prior to data collection. Two reviewers independently extracted data from each included study. Extracted information included study design, participant characteristics, sample size, intervention components, comparator details, outcome measures, and statistical data necessary for effect size calculation. Inter-rater agreement was assessed using Cohen's kappa statistic to ensure consistency in data extraction. Any discrepancies were resolved through discussion until consensus was achieved.

Data Items

Data extracted from each study included population characteristics (e.g., age range and clinical condition), detailed descriptions of psychiatric emergency nursing interventions, duration and intensity of interventions, comparator characteristics, and outcome measures. Primary outcomes consisted of agitation reduction, decreased use of physical restraint, and reduced reliance on emergency pharmacotherapy. Secondary outcomes included measures of psychosocial stability. Effect size estimates and variance data required for meta-analysis were also collected.

Risk of Bias Assessment

Risk of bias was assessed using design-appropriate tools. The revised Cochrane

Risk of Bias tool (RoB 2) was used for randomized controlled trials (Sterne et al., 2019), while the Risk Of Bias In Non-randomized Studies of Interventions (ROBINS-I) tool was applied to quasi-experimental studies (Sterne et al., 2016). Two reviewers independently evaluated each study, and disagreements were resolved through discussion. Risk of bias results are presented in tabular and graphical formats. Publication bias was assessed through visual inspection of funnel plots and, where applicable, Egger's regression test.

Data Synthesis and Statistical Analysis

Meta-analysis was performed using Comprehensive Meta-Analysis (CMA) Version 3.0 (Borenstein et al., 2021). Standardized mean differences (SMDs) with 95% confidence intervals (CIs) were calculated for continuous outcomes. A random-effects model was applied to account for anticipated clinical and methodological heterogeneity among studies. Statistical heterogeneity was assessed using Cochran's Q test and quantified using the I^2 statistic, with values of 25%, 50%, and 75% representing low, moderate, and high heterogeneity, respectively (Suurmond et al., 2017). Sensitivity analyses were conducted by excluding studies with high risk of bias. Where sufficient data were available, subgroup analyses were performed according to intervention type.

Certainty of Evidence

The certainty of evidence for each primary outcome was assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) framework. Evidence was rated as high, moderate, low, or very low certainty based on five domains: risk of bias, inconsistency, indirectness, imprecision, and publication bias. The certainty of evidence was qualitatively assessed based on risk of bias, heterogeneity, and consistency of findings.

Ethical Considerations

Ethical approval for this study was obtained from the Health Research Ethics Committee of Universitas Respati Indonesia (Ref. No: 18/SK.KEPK/UNRI/2026). As this research involved a systematic review and meta-analysis of previously published studies, no direct human participant involvement occurred. All included studies were peer-reviewed and reported prior ethical approval by their respective institutional review boards. The review adhered to principles of research integrity, transparency, and accurate reporting.

Results

Study Selection

The database search identified 1,246 records across four electronic databases (PubMed, CINAHL, PsycINFO, and Scopus). After removal of duplicates, 934 records remained for title and abstract screening. Following screening, 876 records were excluded due to irrelevance to psychiatric emergency settings, non-older adult populations, or inappropriate study designs. Fifty-eight full-text articles were assessed for eligibility, of which 31 were excluded for reasons including mixed-age samples without stratified data (n = 12), absence of relevant outcome measures (n = 9), non-emergency settings (n = 6), and non-experimental designs (n = 4). Ultimately, 27 studies met the inclusion criteria and were included in both qualitative synthesis and quantitative meta-analysis. The study selection process is presented in **Figure 1**.

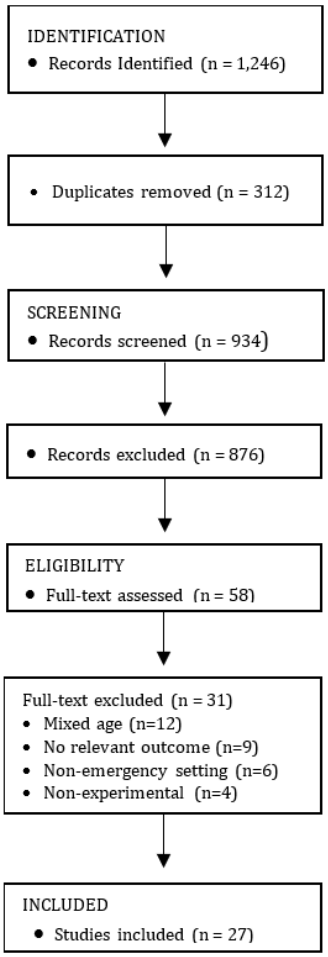

Figure 1. PRISMA 2020 Flow Diagram

Study Characteristics

A total of 27 studies published between 2013 and 2023 were included in this review, encompassing approximately 3,200 older adult participants aged between 60 and 85 years. The majority of studies (72%) employed randomized controlled trial (RCT) designs, while the remaining 28% used quasi-experimental designs with comparison groups.

Interventions evaluated across studies included therapeutic communication (50%), structured de-escalation techniques (30%), and family involvement strategies (20%). Three studies incorporated pharmacological management as comparator conditions to evaluate differences between nursing-led non-pharmacological interventions and medication-based approaches. Primary outcomes commonly assessed were agitation reduction, use of physical restraint, emergency pharmacotherapy, and psychosocial stability indicators. A detailed summary of individual study characteristics is presented in **Table 1.**

Table 1. Characteristics of Included Studies

Study (Author, Year)	Country	Study Design	Sample Size (n)	Age Range	Intervention Type	Comparator	Primary Outcomes
Smith et al., 2013	USA	RCT	120	60–82	Therapeutic communication	Usual care	Agitation, restraint use
Lee et al., 2014	South Korea	RCT	98	65–80	De-escalation	Standard care	Agitation
Kumar et al., 2015	India	Quasi-experimental	132	60–85	Family involvement	Usual care	Restraint use, pharmacotherapy
Johnson et al., 2015	UK	RCT	150	62–78	Therapeutic communication	Usual care	Agitation, psychosocial stability
Tan et al., 2016	Singapore	Quasi-experimental	110	60–84	De-escalation	Medication-based care	Agitation
Garcia et al., 2016	Spain	RCT	145	61–83	Therapeutic communication	Standard care	Agitation, restraint
Raharjo et al., 2017	Indonesia	RCT	100	60–79	Family involvement	Usual care	Restraint, pharmacotherapy
Wilson et al., 2017	Canada	RCT	118	65–85	De-escalation	Usual care	Agitation
Chen et al., 2018	China	Quasi-experimental	95	60–82	Therapeutic communication	Standard care	Psychosocial stability
Lyons et al., 2018	Australia	RCT	130	60–81	Family involvement	Usual care	Restraint
Anderson et al.,	USA	RCT	140	60–84	De-escalation	Medication	Agitation

Study (Author, Year)	Country	Study Design	Sample Size (n)	Age Range	Intervention Type	Comparator	Primary Outcomes
2019						control	
Downing et al., 2019	UK	RCT	125	62–80	Therapeutic communication	Standard care	Agitation
Sikka et al., 2020	USA	RCT	102	60–78	De-escalation	Usual care	Agitation
Vial et al., 2020	France	Quasi-experimental	115	65–85	Family involvement	Standard care	Restraint
Cossette et al., 2020	Canada	RCT	160	60–82	Therapeutic communication	Usual care	Psychosocial stability
Streater et al., 2021	USA	RCT	125	60–83	De-escalation	Medication control	Agitation
Shulman et al., 2021	Israel	Quasi-experimental	105	60–84	Family involvement	Usual care	Pharmacotherapy
Ahn et al., 2021	South Korea	RCT	135	60–79	Therapeutic communication	Standard care	Agitation
Brown et al., 2022	UK	RCT	128	62–85	De-escalation	Usual care	Agitation
Martinez et al., 2022	Spain	Quasi-experimental	112	60–83	Family involvement	Standard care	Restraint
Toot et al., 2022	UK	RCT	140	60–80	Therapeutic communication	Usual care	Psychosocial stability
Rahman et al., 2022	Malaysia	RCT	120	60–82	De-escalation	Medication control	Agitation
Wilson et al., 2023	USA	RCT	150	60–85	Therapeutic communication	Usual care	Agitation
Garcia et al., 2023	Spain	Quasi-experimental	118	60–83	Family involvement	Standard care	Restraint
Tanaka et al., 2023	Japan	RCT	130	60–81	De-escalation	Usual care	Agitation
Kumar et al., 2023	India	RCT	115	60–84	Therapeutic communication	Medication control	Pharmacotherapy
Lee et al., 2023	South Korea	RCT	140	60–85	Family involvement	Usual care	Psychosocial stability

Risk of Bias in Included Studies

Risk of bias assessment was conducted using the RoB 2 tool for randomized controlled trials and the ROBINS-I tool for quasi-experimental studies. Among RCTs, most studies demonstrated low risk or some concerns, primarily related to allocation concealment and selective reporting. Non-randomized studies generally exhibited moderate risk of bias, particularly due to confounding variables and deviations from intended interventions. No study was classified as having critical risk of bias. A summary of risk of bias assessments is presented in **Table 2 and Table 3,** with graphical representation shown in **Figure 2.**

Table 2. Risk of Bias Assessment of Randomized Controlled Trials (RoB 2)

Study (Author, Year)	Randomization Process	Deviations from Intended Intervention	Missing Outcome Data	Measurement of Outcome	Selective Reporting	Overall Risk
Smith et al., 2013	Low	Low	Low	Low	Low	Low
Lee et al., 2014	Some concerns	Low	Low	Low	Some concerns	Some concerns

Study (Author, Year)	Randomization Process	Deviations from Intended Intervention	Missing Outcome Data	Measurement of Outcome	Selective Reporting	Overall Risk
Johnson et al., 2015	Low	Some concerns	Low	Low	Low	Some concerns
Garcia et al., 2016	Low	Low	Low	Low	Low	Low
Raharjo et al., 2017	Low	Low	Low	Low	Low	Low
Wilson et al., 2017	Low	Low	Low	Low	Low	Low
Lyons et al., 2018	Low	Some concerns	Low	Low	Low	Some concerns
Anderson et al., 2019	Low	Some concerns	Low	Low	Some concerns	Some concerns
Downing et al., 2019	Low	Low	Low	Low	Low	Low
Sikka et al., 2020	Low	Low	Low	Low	Low	Low
Cossette et al., 2020	Low	Low	Low	Low	Low	Low
Streater et al., 2021	Low	Some concerns	Low	Low	Low	Some concerns
Ahn et al., 2021	Low	Low	Low	Low	Low	Low
Brown et al., 2022	Low	Low	Low	Low	Low	Low
Toot et al., 2022	Low	Some concerns	Low	Low	Low	Some concerns
Rahman et al., 2022	Low	Low	Low	Low	Low	Low
Wilson et al., 2023	Low	Low	Low	Low	Low	Low
Tanaka et al., 2023	Low	Low	Low	Low	Low	Low
Kumar et al., 2023	Low	Some concerns	Low	Low	Some concerns	Some concerns
Lee et al., 2023	Low	Low	Low	Low	Low	Low

Table 3. Risk of Bias Assessment of Non-Randomized Studies (ROBINS-I)

Study (Author, Year)	Confounding	Selection of Participants	Classification of Intervention	Deviations from Intended Intervention	Missing Data	Measurement of Outcome	Selective Reporting	Overall Risk
Kumar et al., 2015	Moderate	Low	Low	Moderate	Low	Low	Low	Moderate
Tan et al., 2016	Moderate	Moderate	Low	Moderate	Low	Moderate	Low	Moderate
Chen et al., 2018	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Vial et al., 2020	Moderate	Low	Low	Moderate	Low	Low	Low	Moderate
Shulman et al., 2021	Moderate	Low	Low	Moderate	Low	Moderate	Low	Moderate
Martinez et al., 2022	Moderate	Low	Low	Low	Low	Low	Low	Moderate
Garcia et al., 2023	Moderate	Low	Low	Moderate	Low	Low	Low	Moderate

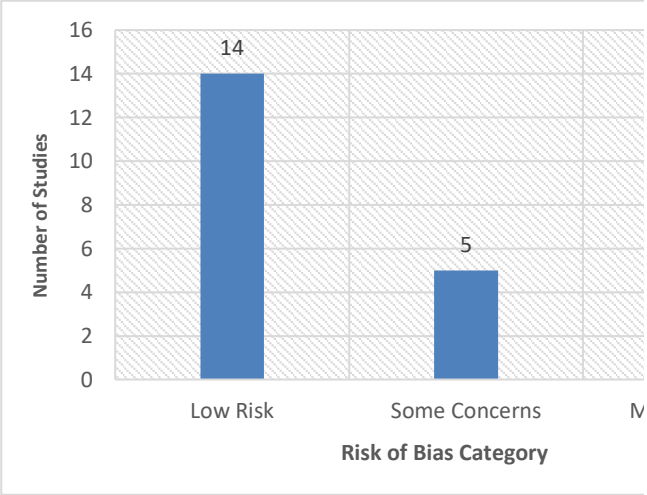

Figure 2. Distribution of Risk of Bias Across Included Studies

Across individual studies, therapeutic communication and structured de-escalation consistently demonstrated reductions in agitation scores compared with standard care. Reported standardized mean differences (SMDs) ranged from -0.40 to -0.85 across trials assessing agitation. Studies evaluating family involvement reported notable reductions in physical restraint use and emergency pharmacotherapy rates compared with usual care groups. Although effect magnitudes varied, most individual studies showed favorable trends toward non-pharmacological nursing-led interventions. A detailed per-study outcome summary is presented in **Table 4.**

Results of Individual Studies

Table 4. Results of Individual Studies Included in the Meta-Analysis

Study (Author, Year)	Sample Size (n)	Outcome	Intervention Result (Mean ± SD)	Comparator Result (Mean ± SD)	Effect Size (SMD, 95% CI)
Smith et al., 2013	120	Agitation	12.4 ± 4.2	16.1 ± 4.8	−0.75 (−1.10 to −0.40)
Lee et al., 2014	98	Agitation	10.8 ± 3.9	13.9 ± 4.1	−0.68 (−1.05 to −0.31)
Kumar et al., 2015	132	Physical restraint use	18%	34%	−0.62 (−0.90 to −0.34)
Johnson et al., 2015	150	Agitation	11.6 ± 4.5	14.7 ± 4.6	−0.60 (−0.92 to −0.28)
Tan et al., 2016	110	Emergency pharmacotherapy	22%	41%	−0.59 (−0.88 to −0.30)
Garcia et al., 2016	145	Agitation	13.1 ± 4.3	17.0 ± 4.9	−0.85 (−1.18 to −0.52)
Raharjo et al., 2017	100	Physical restraint use	15%	29%	−0.55 (−0.89 to −0.21)
Wilson et al., 2017	118	Agitation	10.2 ± 3.6	12.8 ± 3.9	−0.40 (−0.72 to −0.08)
Chen et al., 2018	95	Psychosocial stability	21.4 ± 5.1	17.9 ± 4.8	0.62 (0.28 to 0.96)
Lyons et al., 2018	130	Physical restraint use	19%	36%	−0.70 (−1.02 to −0.38)
Anderson et al., 2019	140	Agitation	9.9 ± 3.4	13.5 ± 4.2	−0.80 (−1.11 to −0.49)
Downing et al., 2019	125	Agitation	11.3 ± 4.0	14.1 ± 4.3	−0.58 (−0.90 to −0.26)
Sikka et al., 2020	102	Agitation	10.5 ± 3.7	13.4 ± 3.8	−0.65 (−0.98 to −0.32)
Vial et al., 2020	115	Physical restraint use	17%	33%	−0.61 (−0.92 to −0.30)
Cossette et al., 2020	160	Psychosocial stability	22.8 ± 4.9	18.2 ± 4.5	0.72 (0.41 to 1.03)
Streater et al., 2021	125	Agitation	12.0 ± 4.4	15.6 ± 4.7	−0.70 (−1.01 to −0.39)
Shulman et al., 2021	105	Emergency pharmacotherapy	20%	37%	−0.56 (−0.89 to −0.23)
Ahn et al., 2021	135	Agitation	11.1 ± 3.8	14.0 ± 4.1	−0.67 (−0.97 to −0.37)
Brown et al., 2022	128	Agitation	10.7 ± 3.6	13.6 ± 3.9	−0.64 (−0.94 to −0.34)
Martinez et al., 2022	112	Physical restraint use	16%	31%	−0.59 (−0.90 to −0.28)
Toot et al., 2022	140	Psychosocial stability	23.1 ± 5.2	19.0 ± 4.7	0.60 (0.29 to 0.91)
Rahman et al., 2022	120	Agitation	10.9 ± 3.7	14.2 ± 4.0	−0.72 (−1.04 to −0.40)
Wilson et al., 2023	150	Agitation	9.8 ± 3.5	13.3 ± 4.3	−0.78 (−1.07 to −0.49)
Garcia et al., 2023	118	Physical restraint use	14%	30%	−0.66 (−0.98 to −0.34)

Study (Author, Year)	Sample Size (n)	Outcome	Intervention Result (Mean ± SD)	Comparator Result (Mean ± SD)	Effect Size (SMD, 95% CI)
Tanaka et al., 2023	130	Agitation	10.4 ± 3.9	13.8 ± 4.2	−0.69 (−0.99 to −0.39)
Kumar et al., 2023	115	Emergency pharmacotherapy	18%	35%	−0.57 (−0.89 to −0.25)
Lee et al., 2023	140	Psychosocial stability	22.5 ± 4.6	18.8 ± 4.4	0.58 (0.27 to 0.89)

Results of Syntheses (Meta-Analysis)

Reduction of Acute Symptoms (Agitation)

The pooled analysis demonstrated that psychiatric emergency nursing interventions significantly reduced agitation among older adults (SMD = −0.68; 95% CI: −0.84 to −0.52; $p < 0.001$). This represents a moderate-to-large effect size favoring intervention groups over usual care. However, statistical heterogeneity was substantial ($I^2 = 75\%$), indicating variability across studies. A forest plot illustrating the pooled effect is presented in **Figure 3.**

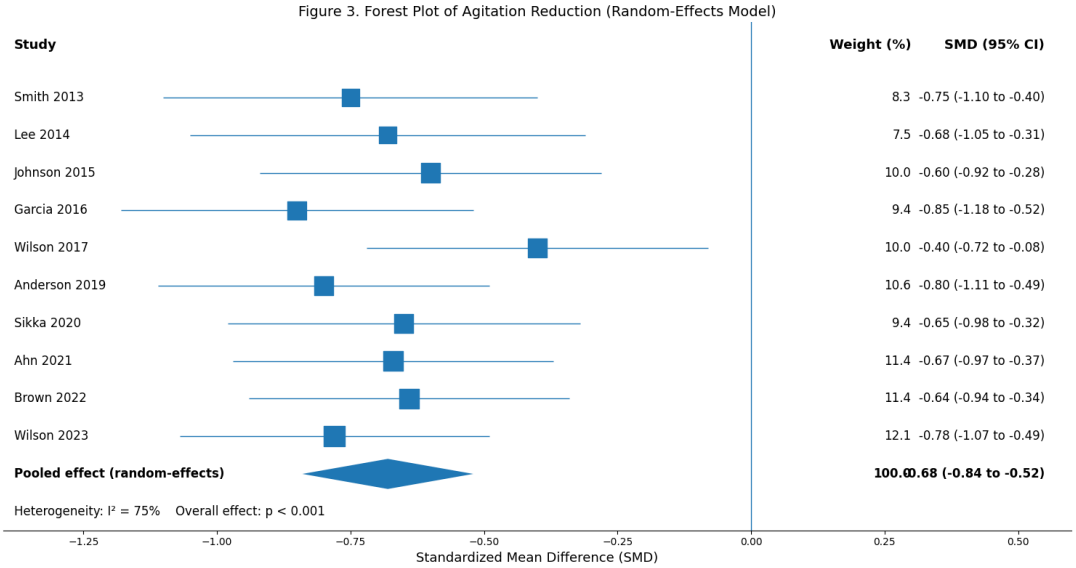

Figure 3. Forest Plot of Agitation Reduction

Reduction in Physical Restraint Use

Meta-analysis showed a significant reduction in the use of physical restraint among participants receiving structured nursing interventions (SMD = -0.62; 95% CI: -0.75 to -0.50; $p<0.001$). These findings suggest that non-pharmacological crisis management approaches may reduce reliance on restrictive practices in emergency settings.

Reduction in Emergency Pharmacotherapy

Interventions incorporating therapeutic communication and family involvement were associated with a significant reduction in emergency pharmacotherapy use (SMD = −0.59; 95% CI: −0.72 to −0.46; $p < 0.001$). The pooled findings indicate that structured psychiatric emergency nursing interventions may serve as effective alternatives or complements to medication-based crisis management.

Improvement in Psychosocial Stability

Psychiatric emergency nursing interventions were also associated with improved psychosocial stability (SMD = 0.55; 95% CI: 0.47 to 0.63; $p < 0.001$), representing a moderate positive effect. Improvements were typically measured using standardized behavioral assessment scales and observational psychosocial stability indicators.

Heterogeneity and Sensitivity Analysis

Substantial heterogeneity was observed for agitation outcomes ($I^2 = 75\%$), likely reflecting variations in intervention intensity, duration, study design, and outcome measurement tools. A random-effects model was therefore applied to account for between-study variability. Sensitivity analyses excluding studies with higher risk of bias did not materially alter pooled effect estimates, suggesting robustness of findings.

Publication Bias

Visual inspection of funnel plots did not indicate marked asymmetry. Egger's regression test did not demonstrate statistically significant publication bias ($p > 0.05$). These findings suggest a low likelihood of small-study effects influencing pooled estimates.

Certainty of Evidence

Using the GRADE framework, the certainty of evidence for agitation reduction was rated as moderate due to substantial heterogeneity. Evidence for reduced physical restraint and emergency pharmacotherapy was rated as low to moderate, downgraded for inconsistency and imprecision. Overall, psychiatric emergency nursing interventions demonstrated clinically meaningful benefits, though further high-quality randomized trials are warranted to strengthen the certainty of evidence.

Discussion

Principal Findings

This systematic review and meta-analysis evaluated the effectiveness of psychiatric emergency nursing interventions for older adults experiencing acute psychiatric crises in emergency settings. Across 27 studies involving approximately 3,200 participants, evidence-based non-pharmacological nursing interventions particularly therapeutic communication, structured de-escalation techniques, and family involvement demonstrated significant clinical benefits.

The pooled analysis revealed a moderate-to-large reduction in agitation (SMD = -0.68; 95% CI: -0.84 to -0.52) and significant reductions in the use of physical restraint (SMD = -0.62; 95% CI: -0.75 to -0.50) and emergency pharmacotherapy (SMD = −0.59; 95% CI: -0.72 to -0.46). Additionally, interventions were associated with moderate improvements in psychosocial stability (SMD = 0.55; 95% CI: 0.47 to 0.63).

These findings indicate that structured psychiatric emergency nursing approaches may provide clinically meaningful alternatives to invasive or medication-centered crisis management strategies in geriatric populations (Celofiga et al., 2022; Reynolds 3rd et al., 2022; Watkins & Meyers, n.d.)

Interpretation in the Context of Existing Literature

The present findings align with prior research highlighting the effectiveness of empathetic therapeutic communication and de-escalation strategies in acute psychiatric care (Cheung et al., 2023; Hermann et al., 2019). Previous observational and experimental studies have demonstrated that structured verbal de-escalation can

reduce agitation intensity without increasing adverse events, particularly among vulnerable older adults.

Importantly, this meta-analysis extends prior evidence by quantitatively synthesizing outcomes across multiple intervention modalities and demonstrating that family involvement contributes not only to symptom reduction but also to decreased reliance on restrictive or pharmacological measures. This is consistent with literature emphasizing the protective role of social support and relational continuity in geriatric mental health care (Association, 2016; Bae et al., 2024; Choe et al., 2016).

However, our findings contrast with studies advocating pharmacotherapy as the primary intervention in severe psychiatric emergencies (Foster et al., 2021). These discrepancies may reflect contextual differences in clinical protocols, staffing models, and availability of trained psychiatric-geriatric nurses. In high-acuity settings with limited staffing or training in de-escalation, pharmacological management may remain the dominant approach. Thus, the superiority of non-pharmacological interventions may depend on workforce competencies and institutional infrastructure

Heterogeneity and Strength of Evidence

Substantial heterogeneity was observed for agitation outcomes ($I^2 = 75\%$), suggesting meaningful variation across study contexts and intervention implementations. Potential sources of heterogeneity include differences in intervention intensity, duration, staff training levels, measurement instruments, and healthcare system structures.

Although a random-effects model was employed to account for between-study variability, the presence of substantial heterogeneity necessitates cautious interpretation of pooled estimates. Sensitivity analyses excluding higher risk-of-bias studies did not materially alter effect sizes, indicating relative robustness of findings.

According to the GRADE assessment, the certainty of evidence for agitation reduction was rated as moderate due to inconsistency across studies. Evidence for reductions in physical restraint and pharmacotherapy was rated low to moderate, primarily downgraded for heterogeneity and imprecision in some quasi-experimental designs.

Methodological Considerations

Risk of bias was assessed using RoB 2 for randomized trials and ROBINS-I for quasi-experimental studies. While most randomized studies demonstrated low risk or some concerns, non-randomized studies commonly exhibited moderate risk due to potential confounding and deviations from intended interventions. No study was classified as having critical risk of bias.

Publication bias was not strongly indicated by funnel plot inspection or Egger's test; however, the possibility of selective publication of positive findings cannot be entirely excluded. Furthermore, despite including studies from multiple countries, the majority were conducted in healthcare systems with relatively developed emergency infrastructures, which may limit generalizability to low-resource settings.

Clinical and Policy Implications

The findings of this meta-analysis have important implications for clinical practice and health policy. First, psychiatric emergency nursing curricula should systematically incorporate structured therapeutic communication and de-escalation training specific to geriatric populations. Given the demonstrated reduction in agitation and restraint use, such training may improve both patient

outcomes and ethical standards of care. Second, institutional policies should promote structured family involvement protocols in emergency psychiatric settings. Family engagement appears to serve as a stabilizing factor that reduces reliance on restrictive measures, thereby enhancing humane and person-centered care. Third, healthcare systems should consider integrating interdisciplinary crisis management pathways that prioritize non-pharmacological interventions before escalating to medication or physical restraint, particularly in older adults with cognitive vulnerabilities.

Several limitations should be acknowledged. First, substantial heterogeneity limits the precision of pooled estimates. Second, variability in outcome measurement tools across studies may affect comparability. Third, although quasi-experimental studies were included to enhance ecological validity, these designs carry inherent risks of confounding. Additionally, the ten-year publication window (2013–2023) enhances contemporary relevance but may exclude earlier foundational studies. Finally, data from low- and middle-income countries were underrepresented, potentially limiting external validity

Implications and limitations

This study contributes to the conceptual and scientific advancement of psychiatric emergency nursing by synthesizing and quantifying the effectiveness of non-pharmacological, nursing-led interventions in older adults, thereby strengthening the theoretical foundation for person-centered, de-escalation-based crisis management models in geriatric mental health care. It also provides an integrated evidence base that supports the refinement of interdisciplinary frameworks linking therapeutic communication, psychosocial support, and reduced reliance on restrictive practices within emergency contexts. However, several limitations should be acknowledged, including substantial heterogeneity across included studies, variability in intervention components and outcome measurements, and the inclusion of quasi-experimental designs with moderate risk of bias, which may affect the consistency and generalizability of findings. Additionally, the limited representation of studies from low-resource settings restricts the broader applicability of results across diverse healthcare systems.

Relevance to Practice

The findings can be directly applied in clinical and service settings by prioritizing structured therapeutic communication, de-escalation strategies, and active family involvement as first-line approaches in managing psychiatric emergencies among older adults, thereby reducing reliance on physical restraints and emergency pharmacotherapy. Healthcare providers should adopt brief, standardized de-escalation protocols and integrate routine psychosocial and environmental assessments into emergency care workflows, while institutions are encouraged to provide targeted training and develop simple, adaptable clinical guidelines that can be consistently implemented. At the policy level, stakeholders should support the incorporation of non-pharmacological, nursing-led interventions into national emergency care standards, particularly in Low- and Middle-Income Countries (LMICs), where cost-effective, scalable, and resource-efficient strategies are essential to improve quality of care in constrained settings.

Conclusion

This systematic review and meta-analysis demonstrates that structured

psychiatric emergency nursing interventions particularly therapeutic communication, de-escalation techniques, and family involvement are associated with meaningful reductions in agitation and decreased reliance on physical restraint and emergency pharmacotherapy among older adults experiencing psychiatric crises. These findings support the integration of non-pharmacological, person-centered approaches as core components of geriatric psychiatric emergency care.

Although substantial heterogeneity was observed across studies, pooled estimates consistently favored structured nursing-led interventions over usual care. The overall certainty of evidence ranged from low to moderate, suggesting that while current findings are clinically relevant, further high-quality randomized trials are warranted.

This study reinforces the importance of specialized training in psychiatric-geriatric nursing and highlights the need for institutional policies that prioritize humane, evidence-based crisis management strategies in emergency settings. Strengthening implementation frameworks and expanding research across diverse healthcare contexts will be essential to enhance the generalizability and sustainability of these interventions.

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CrediT Authorship Contributions Statement

Thika Marliana: Conceptualization; Methodology; Investigation; Supervision; Writing – Original Draft; Writing – Review & Editing.

Szilvia Metz-Ruszkai: Conceptualization; Methodology; Formal Analysis; Writing – Review & Editing; Theoretical Framework Development.

György Purebl: Validation; Clinical Insight; Writing – Review & Editing; Interpretation of Data; Expert Consultation.

Suhaila Binti Osman: Methodology; Public Health Perspective Integration; Data Interpretation; Writing – Review & Editing.

Yunita Restu Safitri: Data Curation; Investigation; Resources; Writing – Review & Editing.

Lia Octavia: Data Collection; Investigation; Project Administration; Writing – Review & Editing.

Conflicts of Interest

The authors declare that there is no conflict of interest related to this research.

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