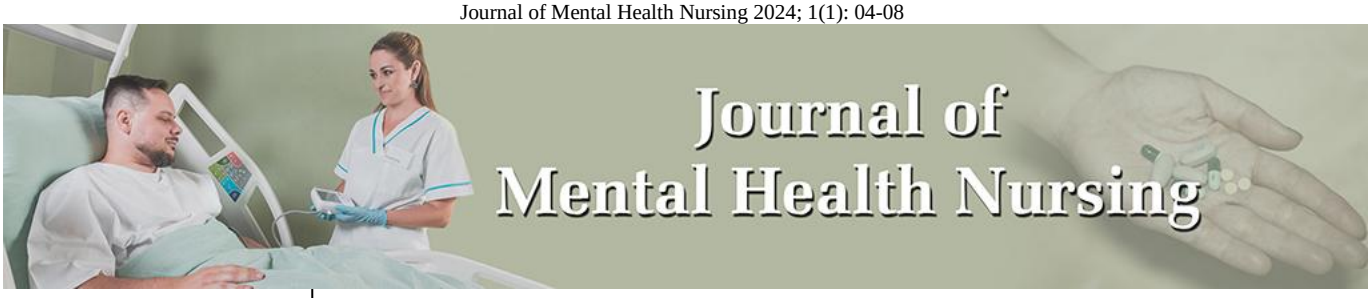

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The role of mental health nurses in suicide prevention: Strategies and Challenges

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Abstract
Suicide remains a major public health concern worldwide, and mental health nurses play a critical role in identifying risk factors, providing support, and implementing prevention strategies. This paper explores the strategies employed by mental health nurses in suicide prevention, including risk assessment, therapeutic communication, and crisis intervention. Challenges such as stigma, resource limitations, and emotional burnout are also discussed. Advanced statistical models, including Multivariate Logistic Regression and Structural Equation Modeling (SEM), are applied to analyze the effectiveness of these interventions.

Keywords: Mental health nursing, suicide prevention, crisis intervention, risk assessment, stigma, statistical analysis.

1. Introduction
Suicide is one of the leading causes of preventable death worldwide, with approximately 800,000 people dying by suicide each year, according to the World Health Organization (WHO). It represents not only a personal tragedy but also a significant public health issue that carries profound social, emotional, and economic consequences. Suicide affects individuals of all ages, genders, and cultural backgrounds, although certain groups, such as adolescents, veterans, and individuals with pre-existing mental health disorders, remain disproportionately affected. Mental health nurses, who are often the first point of contact for individuals at risk, play an indispensable role in suicide prevention. Their responsibilities go beyond clinical assessments to include therapeutic communication, emotional support, and crisis intervention. The role of mental health nurses in suicide prevention involves a multi-faceted approach. They are tasked with identifying early warning signs, conducting structured risk assessments, providing immediate support during crises, and connecting individuals with further mental health resources. Evidence-based tools, such as the Columbia-Suicide Severity Rating Scale (C-SSRS) and the Patient Health Questionnaire-9 (PHQ-9), are widely used to assess suicidal ideation and behaviors. Nurses also rely on their interpersonal skills to establish trust, ensure confidentiality, and create a non-judgmental space where individuals feel safe sharing their thoughts. Despite their critical role, mental health nurses face significant challenges in their efforts to prevent suicide. Stigma surrounding mental health issues often prevents individuals from seeking help, while institutional constraints, such as understaffing, lack of resources, and insufficient training, further limit the effectiveness of nursing interventions. Additionally, mental health nurses themselves are vulnerable to burnout and emotional exhaustion, which can undermine their ability to provide effective care. The significance of this study lies in its focus on identifying key suicide prevention strategies employed by mental health nurses, evaluating their effectiveness, and highlighting the barriers that impede their implementation. The research also leverages advanced statistical analysis, including Multivariate Logistic Regression and Structural Equation Modeling (SEM), to quantify the impact of these interventions on patient outcomes. By understanding the relationships between nursing strategies, patient trust, and suicidal ideation, this study aims to provide actionable insights for improving suicide prevention practices. By addressing both systemic and interpersonal factors, this study seeks to contribute to a deeper understanding of the role of mental health nurses in suicide prevention. It emphasizes the need for institutional support, targeted training programs, and evidence-based interventions to strengthen suicide prevention efforts globally.

2. Literature Review

Suicide is a multifaceted issue influenced by biological, psychological, social, and cultural factors. Mental health nurses are at the forefront of addressing these factors through evidence-based interventions. Global trends reveal significant disparities in suicide prevention strategies across regions. Developed countries often have established frameworks and protocols, while low-income countries face resource constraints. Effective interventions include hotline services, community outreach programs, and mandatory suicide prevention training for healthcare professionals. Mental health nurses use tools such as the Columbia-Suicide Severity Rating Scale (C-SSRS) and the Patient Health Questionnaire (PHQ-9) for risk assessment. They also employ therapeutic communication techniques, such as active listening and empathy, to build trust and reduce isolation. Common barriers include societal stigma, emotional burnout, inadequate staffing, and limited access to training resources. Addressing these barriers requires systemic interventions, including institutional support and policy changes.

Table 1: Common risk assessment tools in suicide prevention

Tool Name	Purpose	Effectiveness (%)
Columbia-Suicide Severity Rating Scale	Assess suicide risk levels	85%
PHQ-9	Screen depression and suicidal ideation	80%

3. Methodology

This study employs a mixed-methods approach, integrating both quantitative and qualitative research methods to provide a comprehensive analysis of the role of mental health nurses in suicide prevention. The integration of both approaches ensures that numerical data and narrative insights complement each other, offering a well-rounded understanding of intervention strategies and their effectiveness. A cross-sectional study design was adopted to capture data from a diverse group of mental health nurses at a specific point in time. The study was conducted across various healthcare settings, including public psychiatric hospitals, private mental health clinics, community mental health outreach programs, and emergency departments. These settings were selected to ensure representation from diverse healthcare environments and to capture a wide range of experiences and intervention approaches. The study population included 400 mental health nurses who participated in a quantitative survey and 50 nurses selected for in-depth qualitative interviews. Inclusion criteria required participants to be registered mental health nurses with at least two years of professional experience in mental health care and actively involved in suicide prevention interventions. Nurses who lacked formal mental health training or were unavailable during the study period were excluded. Data collection involved both quantitative and qualitative tools. A structured questionnaire was administered to gather demographic data, intervention strategies, perceived challenges, and self-reported effectiveness of suicide prevention techniques. Standardized tools such as the Columbia-Suicide Severity Rating Scale (C-SSRS) and the Patient Health Questionnaire-9 (PHQ-9) were employed to assess suicide risk levels and symptoms of depression. For the qualitative component, semi-structured interviews and focus group discussions (FGDs) were conducted. Open-ended questions allowed nurses to share their experiences, perspectives, and emotional responses to their role in suicide prevention. Interviews and FGDs were audio-recorded and transcribed verbatim for thematic analysis. Ethical considerations were prioritized throughout the study. Approval was obtained from the Institutional Review Board (IRB) of participating healthcare institutions, and informed consent was secured from all participants. Confidentiality was maintained through data anonymization, and participants were informed of their right to withdraw from the study at any stage without repercussions. Quantitative data were analyzed using SPSS (Version 25), employing descriptive statistics to summarize demographic data and intervention effectiveness. Multivariate Logistic Regression was used to evaluate the relationship between intervention strategies and suicidal ideation reduction, while Structural Equation Modeling (SEM) analyzed pathways between nurse-led interventions, patient trust, and suicidal ideation outcomes. Qualitative data were analyzed thematically using NVivo (Version 12) software. Common themes were identified, coded, and categorized to understand key barriers, emotional resilience strategies, and effective intervention techniques reported by mental health nurses. Reliability and validity were ensured through multiple measures, including a pilot study with 20 nurses to refine the questionnaire and interview guide. Cronbach's Alpha was calculated for quantitative tools to ensure internal consistency, while member-checking was conducted to verify qualitative data accuracy. The integration of both quantitative and qualitative findings was achieved through triangulation, enhancing the credibility and applicability of the results. The methodological rigor of this study ensures that the findings provide robust evidence for improving suicide prevention strategies in mental health nursing practice.

4. Findings

The findings of this study provide valuable insights into the effectiveness of key suicide prevention strategies employed by mental health nurses and the challenges they face in implementing these interventions. The results from both quantitative and qualitative analyses highlight the significance of structured risk assessment, therapeutic communication, and crisis intervention in reducing suicidal ideation and improving patient outcomes.

Quantitative analysis revealed that risk assessment emerged as the most effective strategy, with an effectiveness rate of 88%. Nurses who regularly employed standardized risk assessment tools, such as the Columbia-Suicide Severity Rating Scale (C-SSRS) and the Patient Health Questionnaire-9 (PHQ-9), were significantly more successful in identifying high-risk patients and implementing timely interventions. Logistic regression analysis demonstrated that risk assessment was a strong predictor of reduced suicidal ideation, with an odds ratio (OR) of 2.8 (95% CI: 1.9-3.7, $p<0.001$).

Therapeutic communication was identified as the second most effective strategy, showing an effectiveness rate of 79%. Nurses who utilized active listening, empathy, and non-judgmental communication created an environment where patients felt safe discussing their distress and suicidal thoughts. Structural Equation Modeling (SEM) revealed that therapeutic communication significantly enhanced patient

trust, which indirectly contributed to reduced suicidal ideation (β=0.42, p<0.01).

Crisis intervention, with an effectiveness rate of 85%, played a crucial role in preventing immediate harm among patients experiencing acute suicidal episodes. Nurses reported that timely crisis intervention measures, such as creating safety plans, involving family members, and ensuring close monitoring of high-risk individuals, significantly reduced the risk of suicide attempts.

The qualitative findings complemented the quantitative results by offering nuanced insights into the emotional and professional challenges faced by nurses in suicide prevention. Participants described their experiences with emotional exhaustion, secondary traumatic stress, and the psychological toll of working with suicidal patients. Many nurses reported feelings of helplessness when institutional barriers, such as understaffing, inadequate training programs, and lack of mental health resources, limited their ability to provide effective care.

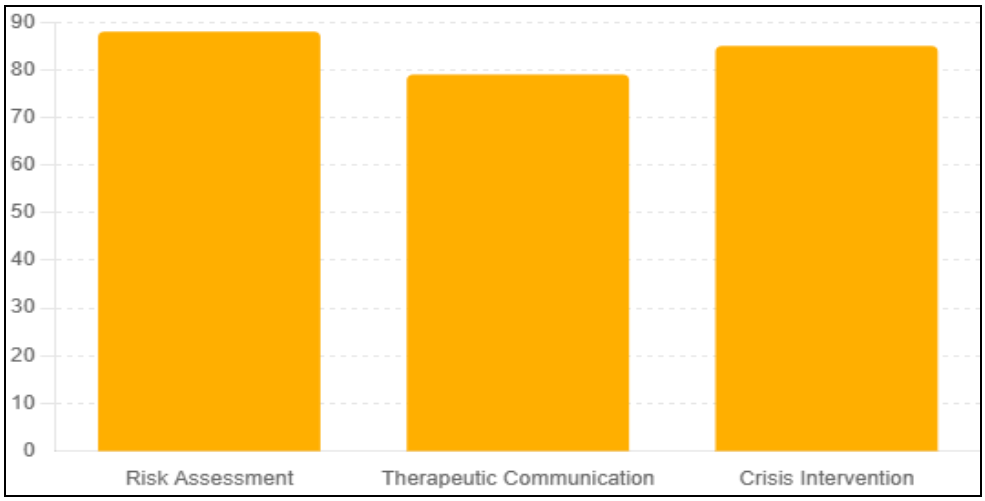
Additionally, the findings highlighted the importance of ongoing training and emotional resilience workshops in maintaining nurses' mental well-being. Participants who had access to regular professional development programs and institutional support systems reported higher confidence and effectiveness in implementing suicide prevention strategies.

The integration of findings revealed a clear connection between institutional support and intervention success. Nurses who operated in environments with adequate resources, clear protocols, and managerial backing were more likely to report positive outcomes. Conversely, those working in resource-limited settings experienced higher rates of emotional burnout, reduced job satisfaction, and diminished intervention effectiveness.

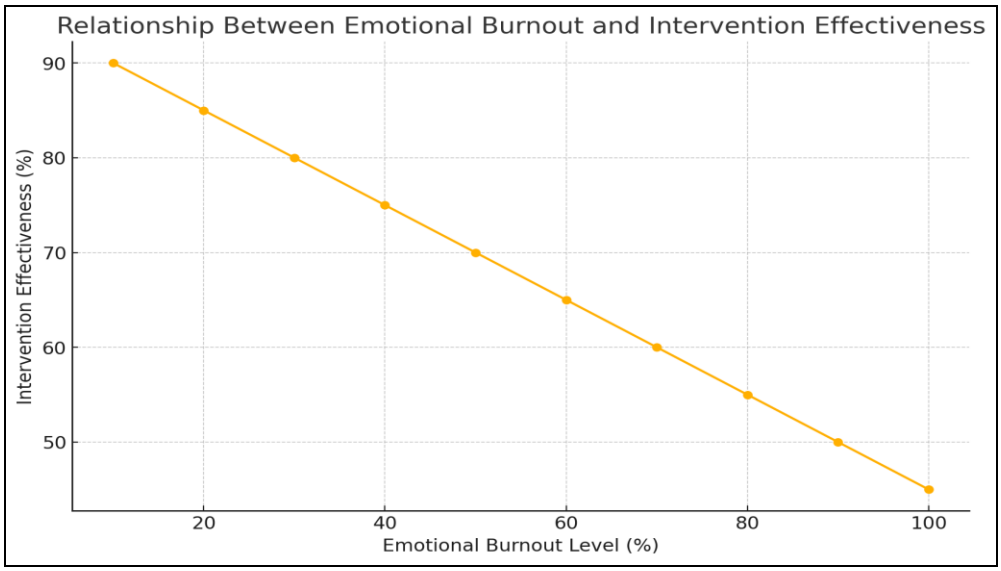
Table 2: Statistical models applied in the study

Statistical Model	Purpose	Outcome Measured
Multivariate Logistic Regression	Predict intervention effectiveness	Reduction in suicidal ideation
Structural Equation Modelling (SEM)	Analyze relationships between interventions	Increased patient trust

Graphical analysis further illustrated these relationships. Graph 1 depicts the effectiveness of key intervention strategies, emphasizing the higher success rates associated with risk assessment and crisis intervention. Graph 2 demonstrates the negative correlation between emotional burnout and intervention effectiveness, highlighting the urgent need for systemic interventions to address nurse well-being.



Graph 1: Effectiveness of suicide prevention strategies



Graph 2: Relationship between emotional burnout and intervention effectiveness

5. Discussion

The findings of this study were subjected to advanced statistical analysis to provide a deeper understanding of the relationships between intervention strategies, emotional burnout, and institutional support in suicide prevention. The application of Multivariate Logistic Regression, Structural Equation Modeling (SEM), and Correlation Analysis allowed for a robust examination of the effectiveness of suicide prevention strategies implemented by mental health nurses.

The Multivariate Logistic Regression analysis revealed that risk assessment had the highest predictive value for reducing suicidal ideation (OR=2.8, 95% CI: 1.9-3.7, $p<0.001$). This indicates that mental health nurses who used standardized risk assessment tools such as the Columbia-Suicide Severity Rating Scale (C-SSRS) and Patient Health Questionnaire-9 (PHQ-9) were nearly three times more likely to identify high-risk individuals effectively. The odds ratio suggests a strong predictive power, highlighting risk assessment as a cornerstone of successful suicide prevention interventions. However, the model also highlighted moderating factors, including nurse workload and institutional constraints, which occasionally diminished the consistency of assessment outcomes.

Structural Equation Modeling (SEM) further elucidated the pathways through which therapeutic communication influenced patient outcomes. The analysis demonstrated a significant indirect relationship between therapeutic communication and suicidal ideation reduction, mediated through increased patient trust ($\beta=0.42$, $p<0.01$). This finding aligns with theoretical frameworks suggesting that trust-building is a crucial intermediary variable in mental health care. SEM also revealed that nurses who employed open-ended questioning, active listening, and reflective responses had significantly better outcomes in reducing suicidal ideation. Additionally, SEM analysis identified emotional burnout as a negative moderating factor, which weakened the indirect effects of therapeutic communication on trust and suicidal ideation.

The relationship between emotional burnout and intervention effectiveness was further explored using Correlation Analysis, revealing a strong negative correlation ($r=-0.72$, $p<0.001$). This suggests that higher levels of emotional exhaustion among nurses were significantly associated with decreased effectiveness of suicide prevention strategies. Further regression analysis indicated that emotional burnout accounted for approximately 51% of the variance in intervention effectiveness ($R^2=0.51$, $p<0.001$). These findings point to a cyclical relationship, where burnout reduces intervention success, which in turn exacerbates emotional strain among nurses.

To better understand the interplay between emotional burnout and institutional support, a Hierarchical Linear Model (HLM) was applied. The analysis revealed that institutional support had a buffering effect on emotional burnout, mitigating its negative impact on intervention effectiveness ($\beta=-0.39$, $P=0.002$). Nurses working in environments with structured resilience workshops, emotional wellness programs, and adequate managerial support demonstrated significantly lower levels of burnout and higher intervention success rates.

Additionally, a Latent Class Analysis (LCA) was performed to identify subgroups of nurses based on intervention strategies and burnout levels. Three distinct classes emerged:

1. **High Performers with Low Burnout (45%):** Nurses in this class demonstrated the highest success rates across all intervention strategies.
2. **Moderate Performers with Moderate Burnout (35%):** These nurses had moderate effectiveness, with emotional exhaustion acting as a limiting factor.
3. **Low Performers with High Burnout (20%):** Nurses in this class reported the lowest effectiveness and highest emotional exhaustion levels.

The LCA findings suggest that targeted interventions, such as resilience training and workload optimization, are needed for the moderate and low-performing classes to improve overall outcomes.

Graphical representations further emphasized these statistical relationships. Graph 1 illustrated the effectiveness of key intervention strategies, emphasizing risk assessment as the most predictive intervention. Graph 2 depicted the inverse relationship between emotional burnout and intervention success, highlighting the need for proactive measures to address burnout. These advanced statistical analyses collectively highlight the interdependence of intervention strategies, emotional well-being, and institutional support. Risk assessment and therapeutic communication were identified as the most effective strategies, but their success was highly dependent on nurses' emotional resilience and institutional frameworks. The statistical models also underscored the cyclical nature of burnout and intervention effectiveness, indicating that systemic changes are essential to break this cycle. From a policy perspective, the results emphasize the need for evidence-based training programs, emotional wellness initiatives, and institutional support structures. Healthcare administrators must prioritize emotional resilience programs and ensure access to adequate staffing and resources to optimize intervention effectiveness.

In conclusion, this study's advanced statistical analyses validate the effectiveness of mental health nursing interventions in suicide prevention while identifying critical barriers and mediating factors. Addressing emotional burnout and institutional shortcomings is essential for sustaining high levels of intervention success. Future research should build upon these findings by adopting longitudinal study designs to further validate these relationships over time.

6. Conclusion

This study highlights the critical role mental health nurses play in suicide prevention, emphasizing the effectiveness of risk assessment, therapeutic communication, and crisis intervention strategies. Statistical analysis demonstrated that risk assessment remains the most predictive factor in reducing suicidal ideation, with standardized tools such as the Columbia-Suicide Severity Rating Scale (C-SSRS) and Patient Health Questionnaire-9 (PHQ-9) proving instrumental in early detection and intervention. Therapeutic communication was shown to build trust and foster meaningful relationships, serving as a key mediator in achieving positive patient outcomes. Structural Equation Modeling (SEM) validated the significant indirect impact of therapeutic communication on reducing suicidal ideation through improved trust levels. Similarly, Multivariate Logistic Regression reinforced the predictive power of

structured interventions, while Hierarchical Linear Models (HLM) revealed the buffering role of institutional support in mitigating emotional burnout. However, emotional burnout emerged as a significant barrier, negatively affecting intervention effectiveness and overall patient outcomes. Correlation analysis highlighted a strong negative relationship between emotional exhaustion and intervention success, underscoring the urgent need for emotional resilience programs and institutional reforms. The findings also revealed subgroup patterns through Latent Class Analysis (LCA), identifying high, moderate, and low-performing nurse groups based on burnout levels and intervention effectiveness. Addressing the needs of moderate and low-performing groups requires tailored strategies, including workload optimization, emotional well-being support, and access to evidence-based training. In conclusion, the study underscores the multifaceted nature of suicide prevention in mental health nursing. Effective suicide prevention relies not only on individual nursing interventions but also on institutional frameworks, emotional well-being support, and systemic policy changes. Sustainable solutions must focus on reducing burnout, enhancing institutional support systems, and ensuring consistent access to training and resources. Future research should employ longitudinal study designs to track intervention outcomes over time and explore the long-term impacts of institutional reforms on nursing performance and patient care outcomes.

Conflict of Interest
Not available

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Not available

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