

Original Research

Can a Group-Based Hope Intervention Reduce the Anxiety Level of Female Inmates?

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ABSTRACT

Background: The prevalence of anxiety disorders is significantly higher among female inmates, often leading to reduced quality of life and maladaptive behaviors. Existing non-pharmacological therapies demonstrate limitations in correctional settings, creating a need for specialized interventions. The objective of this study was to evaluate the effects of group-based hope interventions on anxiety levels among female inmates.

Methods: This quasi-experimental study employed a pre-test and posttest design with a control group. A total of 56 participants ($n=28$ intervention, $n=28$ control) were selected using purposive sampling. The group-based intervention was delivered in 10 sessions, comprising four for group formation and six core sessions focused on goals, pathways, and agency. Anxiety levels were measured using the State Anxiety Inventory (STAI). Analysis utilized paired *t*-tests and independent *t*-tests.

Results: The intervention group showed a substantial decrease in mean anxiety scores from 43.00 ± 3.859 (pre-test) to 34.61 ± 4.400 (post test) (Mean different = 8.393; $p < 0.001$). The control group also exhibited a significant change, with a slight mean increase of 1.821 points ($p < 0.001$). The independent *t*-test confirmed that the anxiety reduction in the intervention group was substantially greater than that of the control group (Mean different = -10.571; $p < 0.001$).

Conclusion: Group-based hope intervention proved to be significantly effective in reducing anxiety levels in female prisoners compared to the control group. These findings support the implementation of this strategy as an evidence-based, practical mental health approach in correctional settings.

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INTRODUCTION

The prevalence of mental disorders among incarcerated women is significantly higher than in the general population (Hidayati et al., 2023). The majority of female inmates reported poor mental health status (93,2%) (McLeod et al., 2025), with 48,0%

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experiencing severe mental disorders (Al-Rousan et al., 2017). Anxiety is among the most prevalent issues, with reported prevalence rates ranging from 23.4% to 53.3% (Bebbington et al., 2017). A comparative analysis of anxiety levels reveals that incarcerated women exhibit significantly elevated levels of anxiety compared to male inmates and women in the general community (Mazher & Arai, 2025). This finding suggests a particular vulnerability among the former population.

A descriptive study was conducted at the Women's Correctional Facility in Semarang, focusing on inmates currently serving their sentences. The study found that the highest proportion of anxiety levels among female inmates fell within the moderate category (44.5%), while the lowest was in the panic category (5.5%). These findings suggest that anxiety is not confined to the period preceding release but rather persists throughout the entire period of incarceration. The etiology of this anxiety is multifactorial, involving a complex interplay of psychological and environmental factors. Among the environmental stressors identified are negative emotions, stress, feelings of failure, and a sense of insecurity. The majority of inmates experiencing anxiety were in early adulthood (66.4%) (Bina et al., 2020), a developmental stage characterized by heightened vulnerability as individuals adapt to new role demands.

The implications of unmanaged anxiety are consequential, manifesting in clinical and social domains. Anxiety symptoms have the potential to interfere with daily activities, manifesting in increased vital signs, decreased appetite, and sleep disturbances (Videbeck, 2022). Anxiety has been demonstrated to induce psychological and emotional distress, which can result in the manifestation of maladaptive behaviors, hostility, and violence within prison settings (Bina et al., 2020). On a psychological level, this burden contributes to a negative perception of quality of life, with 78% of inmates reporting a negative quality of life (Patoka et al., 2017; Skowroński et al., 2021).

The stressors experienced by female inmates are distinct, including challenges such as acclimatizing to the new environment and roles within the prison system, family concerns, the role of mothers in caring for children, and the fear of negative public perception following release. However, the quality and availability of mental healthcare services within correctional facilities frequently fall short of optimal standards (Bina et al., 2020). Anxiety is frequently not identified in the early stages of detention, and follow-up interventions are only implemented if inmates have already received a medical diagnosis, indicating deficiencies in the prevention and treatment programs.

The limitations in available services underscore the necessity for efficacious non-pharmacological interventions. However, the non-pharmacological therapies implemented have contextual limitations. For instance, family-based therapies (e.g., family psychoeducation) pose significant difficulties in their implementation among adult prisoners, given that not all prisoners receive family visits. Furthermore, cognitive-behavioral therapy (CBT) is based on the principle of general behavior modification (Christensen et al., 2021; Mulia et al., 2017). Furthermore, the efficacy of logo therapy in reducing anxiety has been demonstrated to be insignificant. In contradistinction, the therapeutic modality of supportive therapy is exclusively oriented towards enhancing coping mechanisms. Consequently, there is a need for cognitive intervention explicitly designed to target emotion regulation.

Group-Based Hope Intervention has been put forth as a promising alternative. Snyder's Theory of Hope delineates hope as an active cognitive process for achieving goals, consisting of three components: goals, pathways thinking (strategies), and agency

thinking (motivation). The present study posits that establishing pragmatic objectives and cultivating intrinsic motivation can serve as pivotal buffers against anxiety (Leontopoulou, 2020). Hope serves as a cognitive resource that facilitates coping with stressful or threatening conditions, thereby enhancing awareness of negative emotions (Colla et al., 2022).

While the efficacy of hope interventions has been demonstrated in other clinical populations (Cheavens & Whitted, 2023; Simon & Tan-Mansukhani, 2025), there is a lack of research examining group-based hope interventions among adult female prisoners in correctional facilities. The limited number of health personnel (five officers responsible for 344 prisoners) (Sistem Database Pemasyarakatan, 2017) makes group-based interventions an efficient and feasible solution. Group interventions have been shown to yield greater therapeutic benefits in comparison with individual interventions. These benefits include motivation, attention, and the formation of strong psychological bonds (group cohesion) (Marmarosh & Sproul, 2020), which are important external factors for problem-solving (Christensen et al., 2021). Prison nurses, as the primary service providers, assume a role of considerable importance as facilitators in the design and implementation of group-based hope interventions (Almost et al., 2020; Wilma et al., 2023).

The existence of a research gap, as evidenced by the paucity of studies examining the efficacy of hope interventions among adult female prisoners, underscores the necessity for scientific validation. The development of customized intervention mechanisms tailored to the etiology of anxiety and the distinctive characteristics of the prison environment is imperative. Scientific testing is necessary to ascertain the effectiveness of group-based hope interventions. The objective of this study is to address the following research question: The present study seeks to examine the impact of group-based hope intervention on the anxiety levels of female prisoners. The objective of this study is to determine the effect of group-based hope intervention on the anxiety levels of female prisoners.

MATERIALS AND METHOD

Research Design

The study design was quasi-experimental, incorporating a pre-test and posttest, with a control group that received pre-test and posttest measures. The design was selected because of ethical and logistical constraints that precluded the implementation of complete randomization in a correctional facility. Anxiety levels were measured before the intervention (pre-test) and after the intervention (post-test) to compare changes in scores between the intervention and control groups.

Population and Sample Research

This study was conducted at Malang Class IIA Prison (intervention group) and Semarang Class IIA Prison (control group) to minimize contamination between groups. The population of this study comprised female prisoners who met the criteria for anxiety. The sample size was determined using effect size calculations in G*Power 3.1 to test the hypothesis of a difference in the means of two independent groups (Faul et al., 2007).

The effect size of the aforementioned study, as calculated using G-Power 3.1, was 0.83 (Mosalanejad et al., 2013). The G-Power 3.1 application was used to conduct sample calculations, with $\alpha = 0.05$ and power = 0.80. The results of these calculations

indicated that the sample sizes for both the treatment and control groups were 24 individuals. In anticipation of potential sample attrition, the sample calculation was adjusted by allocating an additional 10% of the respondents to the study, thereby increasing the total sample size to 28 individuals. The sampling technique employed in this study was purposive sampling, in which the researcher selected participants based on the research objectives delineated in the inclusion and exclusion criteria.

The inclusion criteria for this study were as follows: The inclusion criteria for this study were as follows: (1) female prisoners with moderate anxiety levels (STAI score of 36–50); (2) aged 25–55 years; (3) maximum education level of senior high school; (4) having a marital status (married, divorced, or widowed); and (5) having served a prison sentence of more than one year. The exclusion criteria encompassed the following: (1) first, those with a chronic disease or other serious physical illness, and (2) second, those diagnosed with a chronic disease or other physical illness.

Intervention Procedure

The intervention trial was conducted on four occasions, and the operational procedures were reviewed with a clinical psychologist prior to implementation. The participants were divided into five groups, with each group consisting of three to eight participants, depending on the block. The researchers assumed the roles of therapists and assistant leaders. The group leaders in this study were female prisoners selected by prison health officials, demonstrated exemplary behavior, had extensive experience in prison, could communicate, and had a minimum high school Education. The group formation phase lasted 4 weeks and comprised four sessions.

The hope intervention phase, which focused on implementing the intervention, spanned six weeks and included six sessions. Consequently, the total number of sessions from group formation to hope intervention was ten. It should be noted that the duration of each session was adjusted to the specific circumstances and conditions in the prison setting. The hope-based intervention was administered in six meetings: the initial three were facilitated by a trained professional, and the subsequent three were independently led by the participants, accompanied by leaders. Each meeting lasted 90 minutes. The control group administered an intervention through a standard program in prison. The final evaluation was conducted one week after the intervention (Table 1).

Table 1. Outline the Development of a Hope Intervention Group

Session	Theme	Content
Group Formation		
1	Forming (Group Formation)	Group formation, selection of a group name, group discussion to establish rules and expectations for each member.
2	Storming (Conflict within the Group)	Identify conflicts that occur among group members. Discuss how to resolve conflicts within the group.
3	Norming (Building Solidarity and Commitment)	Expressing opinions towards the group and opinions to defend the group and determine new rules in the group.
4	Performing (Working together to achieve the goal)	Cooperate to achieve goals by explaining the concept of group-based hope

Session	Theme	Content
Implementation of Intervention		
5	Goal Setting is Realistic and Meaningful	How to create realistic and meaningful goals Communicating goals while in prison and after release
6	Pathways of Hope: Skills and Strategies for Achieving Goals	Problems that may hinder the achievement of goals Problem solving skills
7	Pathways	Characteristics of individuals with effective goal-setting strategies. Strategies to achieve goals.
8	Agent of Hope (Energy and Motivation to Achieve Goals)	Characteristics of individuals with high motivation to achieve their goals. Sources of motivation that can be used to achieve goals.
9	Agent of hope	How to improve motivation to achieve goals Practiced positive self-talk, and participants shared ways to increase motivation to achieve goals.
10	Evaluation	Evaluation of progress toward achieving. Goals and strategies that need to be changed as needed. Evaluation of the five weeks of meetings.

Instruments

The instruments used in this study consisted of two parts: a questionnaire on demographic characteristics, including age, Education, marital status, and length of imprisonment; and a questionnaire measuring anxiety levels. This study used the State Anxiety Inventory (STAI) developed by Charles D. Spielberger, which comprises 20 positive and negative items (Spielberger et al., 1983). STAI scores range from a minimum of 20 to a maximum of 80 for state anxiety. Responses to State anxiety items are rated on a 4-point scale: strongly feel (4), moderate feel (3), somewhat feel (2), and not at all feel (1). The level of anxiety experienced by an individual can be classified as mild if the score falls between 20-35, moderate if the score falls between 36-50, severe if the score falls between 51-65, and panic if the score is in the range of 66-80 (Spielberger et al., 1983). The validity test yielded r count $>$ r table (0.411-0.796), and the Reliability test produced a Cronbach's alpha of 0.892.

Data Analysis

The independent variable in this study was group-based hope intervention, while the dependent variable was the anxiety level of female prisoners. The data were

assessed for normality using the Shapiro-Wilk test, which indicated normality. Data on participant characteristics across groups were analyzed using the Levene and Chi-Square tests. A paired t-test was used to examine the differences in the levels of anxiety before and after the intervention. Additionally, this study employed an independent t-test to examine potential differences in anxiety between groups.

Ethical Clearance

This study has been granted ethical approval by the Research Ethics Commission of the Department of Nursing Science, Faculty of Medicine, Diponegoro University. The approval number is 50/EC/KEPK/D. Kep/VII/2019. The researchers explained the study's purpose, benefits, and procedures to the respondents. The respondents voluntarily participated by signing a consent form, and confidentiality was maintained.

RESULTS

Table 2. Significant Difference of Characteristics Between Intervention and Control Group (n = 56)

Characteristics	The Intervention Group (n=28)		The Control Group (n=28)		p	
	n	%	n	%		
Marital Status						
Widowed	7	25.0	8	28.6	0.763**	
Married	21	75.0	20	71.4		
Prison Term						
1-5 years	15	53.6	10	35.7	0.336**	
>5-10 years	10	35.7	12	42.9		
>10 years	3	10.7	6	21.4		
Education						
Elementary School	6	21.4	6	21.4	0.433**	
Junior High School	9	32.1	5	17.9		
High School	13	46.4	17	60.7		
Age (years)						
	36.29±5.44		37.79±6.130		0.506*	

Noted: *Levene test. **Chi-Square

Table 2 confirms that both research groups were homogeneous at baseline. Ensures that the observed differences in anxiety outcomes (state anxiety) are attributable to the intervention and not initial confounding variables. Following the Group-Based Hope Intervention, the intervention group experienced a significant decrease in anxiety scores ($p = <0.001$). The average anxiety score decreased dramatically from 43.00 (moderate category) to 34.61 (mild category), a drop of 8.393 points. This decrease proves that the intervention successfully facilitated adequate cognitive restructuring, reducing female prisoners' anxiety levels to a healthier category.

The Shapiro-Wilk test yielded p-values greater than 0.05, indicating that the data are not normally distributed (significant values: pre-test intervention 0.217, posttest 0.156; pre-test control 0.265, posttest 0.199 29). However, the data is normally distributed when $p > 0.05$, thereby allowing parametric tests (paired and independent t-tests) to be used.

Table 3. Effect of Group-Based Hope Intervention on Anxiety Levels of Female Inmates in the Intervention Group and Control Group (n = 56)

Group	Mean ± SD (Post-test)	Mean Difference	t-value	p-value	95% CI for Mean Difference
Intervention (n = 28)	34.61 ± 4.40	8.39	16.63	< 0.001	7.36 – 9.43
Control (n = 28)	45.18 ± 3.80	-1.82	-7.38	< 0.001	-2.33 – -1.31

Interestingly, Table 3 shows that the control group also exhibited statistically significant changes ($p = < 0.001$). However, anxiety in this group increased by an average of 1.821 points (from 43.36 to 45.18) instead of subsiding. These fluctuations and increases underscore the sensitivity of state anxiety to environmental factors and imply that the routine activities of the prison (treatment as usual, or TAU) and the passive social support received by the control group were insufficient to counteract the psychological stressors faced by inmates during the study period. The increase in scores indicates that, without targeted cognitive interventions, inmates' anxiety is at risk of worsening.

Table 4. Differences in the Effect of Group-Based Hope Intervention on Anxiety Levels of Female Inmates between the Intervention Group and the Control Group (n = 56)

Group	Mean Difference†	t-value	p-value	Effect Size (Cohen's d)	95% CI
Intervention (n = 28)	-10.57	-9.62	< 0.001	0.86	-12.77 to -8.37
Control (n = 28)					

Note: Values are presented as mean ± standard deviation (SD). Statistical significance was set at $p < 0.05$.

The comparison between groups in Table 4 confirms the highly significant effectiveness of the group-based hope intervention ($p = 0.000$). The Intervention Group exhibited a significantly lower final score than the Control Group, with a mean difference of -10.571 points. This finding is further substantiated by an Effect Size (Cohen's d) of 0.86, which is categorized as a powerful effect. The 95% confidence interval (CI) for the mean difference between groups ([-12.77, -8.37]), which does not include zero, further confirms that group-based hope intervention is a determining factor in anxiety reduction and has substantial clinical significance.

DISCUSSION

The present study provides substantial evidence to support the hypothesis that group-based hope intervention is an effective method for reducing anxiety levels (state anxiety) in female prisoners. The decline in the mean anxiety score from 8.393 to 7.393 in the intervention group indicates that this intervention is significantly more effective than standard care. This finding aligns with previous studies that have demonstrated a correlation between hope therapy and reduced anxiety levels (Kısaoglu & Tel, 2024). Furthermore, the present study substantiates Group-based hope intervention as a

remarkably efficacious non-pharmacological approach, particularly within the context of high-risk populations within prison settings.

Measured levels of anxiety, with a particular focus on state anxiety, are indicative of immediate emotional and physiological responses to perceived threats within the stressful prison environment. This anxiety is precipitated by feelings of helplessness and uncertainty regarding the future. The efficacy of group-based hope intervention is predicated on its theoretical underpinnings, which demonstrate its capacity to operate at the cognitive level. By modulating the psychological focus of prisoners, group-based hope intervention effectively redirects their tendency towards negative rumination. This practice has been demonstrated to exacerbate anxiety, thereby fostering a proactive orientation. Hope, in this context, functions as a psychological resource that protects individuals from anxiety by prioritizing more adaptive emotional responses (Wai-Ming Mak et al., 2021).

The efficacy of Group-Based Hope Intervention is attributable to the reinforcement of three fundamental components of Snyder's Hope Theory. Expectancy is defined as an active cognitive process for achieving goals, which is directly opposed to the emotional passivity that often accompanies anxiety. The activation of this cognitive process is intended to encourage prisoners to assume the role of agents of change in their lives, thereby transforming feelings of entrapment into feelings of control (Locus of control) over their destiny (Winarsunu et al., 2023).

The goal-setting stage in group-based hope intervention is pivotal because it fundamentally shifts the direction of prisoners' psychological energy. Prisoners are assisted in establishing realistic and meaningful objectives, such as self-improvement, motherhood, and post-release employment. This process serves as a diversion, effectively channeling the psychic energy previously expended on worry (i.e., unproductive anxiety) into forward-looking motivation (Ahmadifajr et al., 2023). This transformation of energy directly reduces the cognitive space for threatening thoughts, which is central to the reduction in anxiety scores. Anxiety in prison populations frequently originates from the perception that challenges are insurmountable.

The Mind Path training program is designed to instruct inmates in structured problem-solving methodologies, thereby facilitating the development of diverse alternative strategies (i.e., Plan B, C, etc.). By establishing a predetermined trajectory, group-based hope intervention has effectively reinstated a sense of cognitive agency within a highly constrained environment. The formulation of dual strategies has been demonstrated to neutralize feelings of helplessness, thereby transforming situations perceived as unavoidable threats into a series of solvable challenges (Colla et al., 2022).

The Mind Agent serves as a catalyst, propelling individuals to embark on their journeys and persevere in their endeavors. The Group-Based Hope Intervention method is predicated on the notion that positive self-talk and the acknowledgment of minor achievements can serve as catalysts for overcoming obstacles without succumbing to despair. This mechanism is supported by neurocognitive findings showing that elevated hope is associated with reduced brain activity in the medial orbitofrontal cortex (mOFC). Hope functions as a mediator that safeguards spontaneous brain activity from the deleterious effects of anxiety, thereby enabling individuals to sustain goal-oriented behavior even under conditions of chronic stress (Gao & Meng, 2023; Thomas, 2025; Wang et al., 2017).

The delivery of interventions in a group format, referred to as Group-Based Hope Intervention, has been demonstrated to provide vital therapeutic factors. Research has

demonstrated that high group cohesion fosters a therapeutic climate characterized by trust and acceptance, which is of paramount importance in an isolated environment (Forsyth, 2021). The concept of cohesion plays a pivotal role in facilitating universality, wherein prisoners come to recognize that their experiences of suffering and anxiety are shared by others, thereby leading to a reduction in feelings of shame and isolation. The existence of robust social bonds functions as an external factor that reinforces individual problem-solving efforts (Borek et al., 2019; Christensen et al., 2021).

The control group results showed a significant effect, despite only a slight increase in the average score of 1.821, highlighting that momentary anxiety (State Anxiety) is influenced by daily interactions and natural social support available in prisons (Treatment as Usual - TAU). Routine activities such as worship can provide temporary calm. However, the increase in scores underscores the fluctuating nature of anxiety without structured intervention. TAU only provides reactive coping support, not transformative cognitive restructuring (Machado et al., 2024; Putri et al., 2025)

Significant differences in anxiety scores between the intervention and control groups on the posttest confirm the superiority of the Group-Based Hope Intervention. The intervention provides more than passive emotional support; it actively teaches applicable cognitive skills, such as goal setting, strategy planning, and motivation enhancement. These skills enable prisoners to ward off anxiety intrinsically. The synergy between the hope and group cohesion components distinguishes the Group-Based Hope Intervention as a sustainable, effective alternative to the temporary benefits of prison routines (Cohen-Chen & Pliskin, 2025; Kwok et al., 2024; Xiang et al., 2020).

Highlights the importance of prison nurses adopting this structured intervention. This study demonstrates that the group-based hope intervention is a practical and feasible strategy for reducing anxiety in female prisoners. Therefore, it is an important addition to psychiatric nursing practice in correctional facilities. The main implication is that nurses should facilitate this program. However, the study has limitations, including a quasi-experimental design that limits generalizability and a lack of long-term follow-up measurements. These limitations emphasize the requirement for additional studies with more rigorous designs and measurements of the intervention's long-term effects to confirm the sustainability of the changes.

CONCLUSION

The findings of the study demonstrated that the group-based hope intervention was significantly more effective in reducing anxiety levels among female prisoners compared to treatment as usual. The success of this program is rooted in novel insights into the cognitive-social mechanisms underlying Snyder's three-component hope training (Goal Setting, Pathways, Agency). This approach is supported by robust group cohesion dynamics, which effectively stimulate cognitive restructuring, thereby transforming helplessness into a sense of self-control.

These findings carry substantial practical implications for correctional facility administrators, who would be well-advised to immediately integrate group-based hope interventions as an alternative to mental health interventions facilitated by nurses or trained psychologists. This study provides a foundation for advancing nursing research by focusing on the assessment of long-term effects (minimum 6-month follow-up) and the examination of mediating variables (e.g., self-efficacy or coping skills) to clarify causal pathways and enhance therapeutic models

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