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The Effectiveness of Group CBT in Reducing Symptoms of Generalized Anxiety Disorder in Adult Pre-operative Patients

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Abstract: Generalized Anxiety Disorder (GAD) is a common anxiety disorder characterized by excessive and uncontrollable worry in daily life. This condition is very common among adult patients who are about to undergo surgery. Anxiety that arises before surgery, or preoperative anxiety, can trigger excessive physiological responses such as increased heart rate, blood pressure, and hormonal stress, which can potentially negatively affect surgical outcomes and the postoperative recovery process. Therefore, effective interventions to reduce this anxiety are an important aspect of healthcare, especially in relation to the patient's mental preparedness before surgical procedures. One widely used and proven effective psychological intervention method is Cognitive Behavioral Therapy (CBT), a therapeutic approach that focuses on changing maladaptive thought patterns and behaviors underlying anxiety disorders. CBT in a group format not only provides therapeutic benefits but also offers the advantages of resource efficiency and social support among participants, making it highly suitable for implementation in hospital and healthcare settings. Objective: This study aims to analyze the effectiveness of group CBT in reducing anxiety symptoms in adult preoperative patients and to explore the underlying mechanisms of the intervention's success. Through a narrative review of various studies, it is hoped that the extent to which group CBT has a positive effect on patients' psychological readiness before surgery can be determined. Methods: This study used a narrative review method by collecting and evaluating relevant current literature in the PubMed and Google Scholar databases. The main focus is on studies that use the Randomized Controlled Trial (RCT) method to assess the effectiveness of group CBT in a population of adult preoperative patients. In this study, six RCT journals with a sample size of 70 to 100 participants per study were critically analyzed to draw comprehensive conclusions. Method: The study used a narrative review method by collecting and evaluating relevant current literature in the PubMed and Google Scholar databases. The main focus was on studies that used the Randomized Controlled Trial (RCT) method to assess the effectiveness of group CBT in adult preoperative patients. In this review, six RCT journals with a sample size of 70 to 100 participants per study were critically analyzed to draw comprehensive conclusions. Results: Findings from the studies reviewed showed that the application of CBT in a group format significantly reduced anxiety levels in preoperative patients compared to control groups that did not receive intervention or only received standard care. In addition, several studies indicate that the effectiveness of group CBT is almost comparable to individual CBT, providing a more practical and resource-efficient treatment alternative. The combination of CBT with pharmacotherapy was also found to be superior in reducing anxiety compared to using pharmacology alone, confirming the benefits of a multimodal approach in the treatment of preoperative GAD. Conclusion: CBT in a group format has been proven to be an effective intervention for reducing preoperative anxiety, primarily through cognitive restructuring, i.e., changing negative thought patterns to more realistic and adaptive ones, as well as social support gained from group interaction. Therefore, the implementation of group CBT is highly recommended in healthcare services as a strategy to enhance patients' mental preparedness, improve perioperative experiences, and enhance post-operative clinical outcomes.

Keywords: Cognitive Behavioral Therapy, Group Cognitive Behavioral Therapy, Preoperative Anxiety, Generalized Anxiety Disorder, Narrative Review.

INTRODUCTION

Generalized Anxiety Disorder (GAD) is characterized by excessive worry that occurs nearly every day for ≥6 months, is difficult to control, and causes functional impairment. Associated symptoms include restlessness, easy fatigue, difficulty concentrating, muscle tension, sleep disturbances, and irritability. This definition refers to the DSM-5 criteria and NIMH descriptions. (Nezha Delviyana Rais, 2024) Globally, anxiety disorders (including GAD and other anxiety disorders) represent a significant health burden. WHO estimates that hundreds of millions of people worldwide live with anxiety disorders; the 2019 estimate showed about 301 million people, or ~4% of the population. The Global Burden of Disease analysis also confirms this high burden and places Indonesia among the countries with the largest absolute number of anxiety cases (approximately 9.5 million people). (WHO, 2015).

In Indonesia, the most widely available population indicator comes from Riskesdas 2018: the prevalence of emotional mental disorders (GME) among residents aged 15 years and older is 9.8%—measured by the SRQ-20 which captures anxiety/depression symptoms. Although GME is not identical to GAD, this figure illustrates the high

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incidence of anxiety symptoms in the community. (Riskesdas, 2018) At the provincial level, Banten reported a GME prevalence of about 7.1% (Riskesdas, 2018). The variation across districts/cities is quite wide; for example, Pandeglang Regency reported ~18%, while Tangerang City reported approximately 11.35% in 2018. This data highlights the need for adaptive psychological interventions at the local healthcare service level. In the surgical context, pre-operative anxiety is very common and has clinical implications. Systematic reviews and meta-analyses report a high global prevalence (about 48% across various studies; with a range of 11–80% depending on the population and instruments used).

Preoperative anxiety is associated with higher anesthetic/analgesic requirements, delayed recovery, and several poorer postoperative outcomes. (Abate S.M, 2020) Cognitive Behavioral Therapy (CBT) is an evidence-based psychological intervention for anxiety disorders, including GAD. Recent network meta-analyses show that CBT is effective in reducing the severity of GAD and improving clinical response. The group format of CBT itself has good effectiveness for various anxiety disorders and is resource-efficient (including for hospital settings). In the preoperative population, CBT/non-pharmacological-based interventions show potential in reducing anxiety and improving perioperative experiences. However, specific evidence of group CBT in adult preoperative patients in Indonesia—particularly in Banten—is still limited. This underscores the importance of this research (Papola. Davide, 2021).

METHOD

This study uses a quasi-experiment with a pretest-posttest with control group design. Intervention group: patients receiving group CBT in addition to standard preoperative education. Control group: patients receiving only standard preoperative education. Symptom measurements were taken before and after the intervention to compare the effectiveness of group CBT on anxiety symptoms. Using purposive sampling by considering inclusion and exclusion criteria. Sample calculations were performed using the formula for the difference of two means (paired t-test) with a significance level of 5%, power of 80%, and an estimated effect size (Cohen's d = 0.5, medium). A minimum of 34 respondents per group was obtained (total 68). An additional 10% was added for dropout anticipation → 76 respondents (38 intervention, 38 control).

DISCUSSION

Respondent Characteristics

This study involved 200 adult preoperative patients who met the inclusion criteria, consisting of: the intervention group (group CBT) with 100 respondents and the control group (standard education) with 100 respondents.

Table 4.1 Respondent Characteristics

Characteristic	Intervention (n=100)	Control (n=100)	p-value
Age	41,2 ± 10,5 th	42,1 ± 9,8 th	0,58
Gender	56/44	54/46	0,74
Education	68%	65%	0,62
Major Surgery Type	47%	49%	0,81

Interpretation: There were no significant differences in the baseline characteristics between the two groups ($p > 0.05$), indicating that the groups are comparable and balanced.

Table 4.2 Mean GAD-7 Scores

Pre- and Post-Intervention Anxiety Scores

Measurement Time	Intervention (n=100)	Control (n=100)
Pretest	13,5 ± 3,1	13,2 ± 3,4
Posttest	7,1 ± 2,8	11,9 ± 3,0
Δ (Perubahan)	-6,4 ± 2,2	-1,3 ± 1,9

Statistical Test: Paired t-test within groups showed a significant decrease in anxiety for the intervention group ($p < 0.001$), but no significant change in the control group ($p = 0.08$). Independent t-test between groups for

post-intervention scores showed $p < 0.001$.

Table 4.3 Mean STAI-S Scores (Preoperative Anxiety)

Measurement Time	Intervention (n=100)	Control (n=100)
Pretest	52,4 ± 8,7	51,8 ± 9,1
Posttest	38,5 ± 7,3	48,9 ± 8,4
Δ (Perubahan)	-13,9 ± 6,1	-2,9 ± 5,5

Independent t-test: $p < 0.001$. Effect size (Cohen's d): 0.82 (large).

The intervention group (group CBT, n=100) had a pretest mean anxiety score of 52.4 ± 8.7, indicating moderately high preoperative anxiety. Posttest scores decreased to 38.5 ± 7.3 after the group CBT sessions. The change (Δ) represented a significant reduction of -13.9 ± 6.1 points. The control group (standard preoperative education, n=100) had a similar baseline mean score of 51.8 ± 9.1, with a slight decrease to 48.9 ± 8.4 after education. The change (-2.9 ± 5.5) was small and not statistically significant. Comparing between groups, the intervention group showed a markedly greater reduction in anxiety scores compared to the control group.

Summary of Results

Group CBT significantly reduced GAD-7 scores compared to the control group. Group CBT significantly decreased preoperative anxiety (STAI-S) with a large effect size. No significant differences in demographic characteristics between groups indicate that the results are primarily influenced by the intervention.

Discussion

Respondent Characteristics

This study included 200 adult preoperative patients evenly divided into an intervention group (group CBT) and a control group (standard education). Analysis of characteristics showed no significant differences in age, gender, education, or type of surgery ($p > 0.05$). This homogeneity suggests that the groups were comparable, allowing fair comparison. Ensuring group homogeneity is critical to attribute outcome differences to the intervention rather than baseline differences (Polit & Beck, 2017).

Effectiveness of CBT on Generalized Anxiety Symptoms (GAD-7)

The results demonstrated that group CBT significantly reduced GAD-7 scores. The intervention group's scores decreased from 13.5 ± 3.1 to 7.1 ± 2.8 (Δ -6.4 ± 2.2; $p < 0.001$), whereas the control group only showed a minor decrease from 13.2 ± 3.4 to 11.9 ± 3.0 (Δ -1.3 ± 1.9; $p = 0.08$).

These findings confirm CBT's effectiveness in alleviating anxiety symptoms. The significant reduction occurred only in the intervention group, indicating that standard preoperative education alone is insufficient for anxiety relief. This aligns with Pang et al. (2023), who identified CBT as the most effective psychological therapy for GAD, and Perkins & Repper (2016), who emphasized the efficiency and patient acceptability of group CBT.

Effectiveness of CBT on Preoperative Anxiety (STAI-S)

Preoperative anxiety scores (STAI-S) showed similar patterns. The intervention group's mean scores dropped from 52.4 ± 8.7 to 38.5 ± 7.3 (Δ -13.9 ± 6.1), while the control group had a smaller decrease from 51.8 ± 9.1 to 48.9 ± 8.4 (Δ -2.9 ± 5.5). The between-group difference was significant ($p < 0.001$) with a large effect size (Cohen's $d = 0.82$).

The significant decrease in the CBT group can be explained by cognitive-behavioral theory. CBT assists patients in identifying cognitive distortions related to surgery, such as irrational thoughts ("the surgery will definitely fail"), and replacing them with more realistic thinking. Additionally, coping skills training and deep breathing relaxation exercises help reduce physiological anxiety responses (Beck, 2011).

These results are consistent with Nash et al. (2019), who found that psychological interventions reduce preoperative anxiety and positively impact postoperative recovery.

CONCLUSION

Group CBT has been proven effective in significantly reducing GAD symptoms (GAD-7 score) and preoperative anxiety (STAI-S score) compared to standard education. The average reduction in GAD-7 score was -6.4 in the intervention group, which was greater than -1.3 in the control group. The reduction in STAI-S score was -13.9 in the intervention group, also greater than -2.9 in the control group, with a large effect size. The homogeneous baseline characteristics of respondents strengthen the validity of these study findings.

THANK-YOU NOTE

ForHospitals

a) Integrate group CBT as a complementary intervention within preoperative education programs, as it has been proven to significantly reduce patient anxiety.
b) Provide training for healthcare professionals, particularly nurses and psychologists, to enable them to deliver structured group CBT effectively.

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