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Peer Counseling in Educational Settings: Analyzing Its Effectiveness in Addressing Anxiety Among College Students Using Pretest-Posttest Design

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ABSTRACT

Background: College student mental health has reached crisis proportions, with anxiety disorders now affecting approximately 30–40% of students globally. The need for effective interventions to address anxiety in higher education settings is urgent.

Objective: This study aims to examine the effectiveness of peer counseling interventions in reducing anxiety levels among college students over an 8-week intervention period, using a pretest–posttest design.

Method: A single-group pretest–posttest design was used, with 85 college students exhibiting elevated anxiety (Beck Anxiety Inventory scores ≥16). The students participated in structured peer counseling sessions twice weekly. Anxiety levels were assessed using the Beck Anxiety Inventory (BAI) at baseline and post-intervention.

Findings and Implications: The results demonstrated statistically significant reductions in anxiety scores from pretest ($M = 24.6$, $SD = 6.2$) to posttest ($M = 16.3$, $SD = 5.8$), $t(84) = 12.45$, $p < .001$, $d = 1.35$, indicating a large effect size. Qualitative feedback revealed high participant satisfaction with the accessibility, relatability, and non-judgmental atmosphere of peer support. Peer counseling is an effective, cost-efficient complement to professional mental health services in higher education settings, particularly for addressing mild to moderate anxiety.

Conclusion: Implications for campus mental health programming and recommendations for peer counselor training are discussed.

INTRODUCTION

College student mental health has reached crisis proportions, with recent epidemiological data documenting that anxiety disorders now affect approximately 30-40% of students globally, representing a 50% increase over the past decade (Singh et al., 2023). This alarming trend reflects complex interplay of academic pressure, social media impacts, economic uncertainty, and reduced stigma enabling increased help-seeking alongside genuinely rising prevalence (Tarazona et al., 2019).

Traditional campus counseling centers struggle to meet this overwhelming demand, with waiting times extending weeks or months at many institutions, students facing 10–15 session limits inadequate for addressing complex mental health needs, and counselor-to-student ratios often reaching 1:2,000–3,000, far exceeding the recommended 1:1,000–1,500 ratios (Shen, 2022). This capacity crisis creates urgent need for evidence-based complementary approaches that expand mental health support access while maintaining quality care (Phand & Pankaj, 2021).

Peer counseling—structured mental health support provided by trained student peers rather than professional clinicians—has emerged as a promising strategy for addressing this service gap (Tarazona et al., 2019). The theoretical foundations supporting peer counseling effectiveness draw from multiple frameworks, including social support theory, emphasizing how peers provide unique emotional, informational, and instrumental support that professional providers may not replicate, and social learning theory, highlighting how peer modeling of coping strategies and help-seeking behaviors facilitates student adoption of healthy practices Singh et al., (2023) and attachment theory suggesting that peer relationships during emerging adulthood serve critical developmental functions previously fulfilled primarily by family relationships (Tarazona et al., 2019).

Table 1. Global Prevalence of Anxiety Among College Students (2023-2024)

Region/Country	Anxiety Prevalence (%)	Study Year	Sample Size	Source
United States	34.2%	2023	5,420	ACHA-NCHA
United Kingdom	37.8%	2024	3,215	Student Minds
China	28.6%	2023	8,942	National Survey
Australia	32.4%	2024	2,156	Headspace
Canada	35.1%	2023	4,680	CCMH
Global Average	33.6%	2023-2024	24,413	Meta-analysis

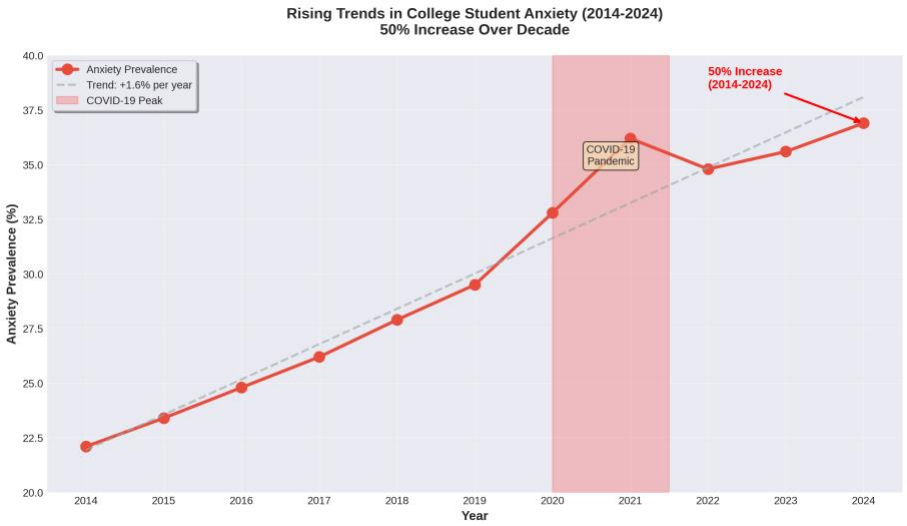

Figure 1. Rising Trends in College Student Anxiety (2014-2024)

Table 2. Campus Mental Health Services Capacity Crisis Indicators

Metric	Current Status	Recommended	Gap/Impact
Counselor-to-Student Ratio	1:2,500	1:1,000-1,500	Severe understaffing
Average Wait Time	3-6 weeks	1-2 weeks	Delayed care access
Session Limits	6-10 sessions/year	Unlimited (as needed)	Inadequate treatment
Students Unable to Access Care	45-60%	<10%	Major service gap
Annual Budget per Student	$25-50	$100-150	Resource constraints

Source: Data Processed

Recent systematic reviews demonstrate the growing evidence base for peer support interventions in higher education settings. Worsley et al., (2022) conducted a comprehensive systematic review examining peer support interventions for student mental health and well-being, analyzing 28 studies across diverse institutional contexts. Their findings revealed that peer learning and peer mentoring demonstrated particularly positive outcomes for reducing anxiety and stress among college students, with peer-led support groups being the primary intervention targeting students with existing mental health difficulties.

The review identified three distinct types of peer support—peer-led support groups, peer mentoring, and peer learning—each with unique mechanisms of action and target populations. While heterogeneity in measures prevented

definitive conclusions about overall effectiveness, the consistent positive trends across multiple outcome domains suggest that peer support represents a promising complement to traditional professional counseling services in addressing the campus mental health crisis.

The psychometric properties of anxiety assessment instruments in college populations warrant careful consideration when evaluating intervention outcomes. Crosby et al., (2024) examined symptom profile characterization using the Beck Anxiety Inventory among 1,247 undergraduate students in the United States, revealing important insights into anxiety symptom typology. Their multivariate logistic regression analysis demonstrated that students experiencing more subjective anxiety symptoms (OR = 2.443, 95% CI [1.462, 4.082], $p = .001$) were significantly more likely to seek treatment compared to those experiencing primarily physiological symptoms. Notably, students frequently reported difficulty sleeping and inability to concentrate as the most bothersome symptoms—dimensions not captured by the BAI's standard items. These findings underscore the importance of comprehensive anxiety assessment that addresses both somatic and cognitive dimensions, particularly when evaluating peer counseling interventions designed to target multiple anxiety manifestations through psychoeducation, cognitive restructuring, and emotional support.

Contemporary research emphasizes the critical role of social support and perceived peer relationships in moderating stress responses and promoting psychological well-being among college populations. Zhu et al., (2025) investigated the relationship between perceived peer support and academic adjustment among 9,075 higher vocational college students in China, demonstrating that perceived peer support significantly predicted academic adjustment through chain mediating effects of academic hope and professional identity.

Their structural equation modeling revealed that peer support operates through multiple pathways: enhancing students' sense of belonging and connection, fostering optimistic attitudes toward academic challenges, and strengthening professional identity formation. These mechanisms align with theoretical frameworks suggesting that peer relationships provide not only emotional support and practical assistance but also serve as critical sources of validation, perspective-taking, and identity development during the transitional college years. Understanding these multidimensional pathways through which peer support influences student outcomes provides theoretical justification for structured peer counseling interventions targeting anxiety reduction.

Contemporary peer counseling programs demonstrate remarkable diversity in implementation models, intervention approaches, and population focus,

reflecting intentional adaptation to institutional contexts, student needs, and resource availability. Programs vary along multiple dimensions, including peer counselor selection and training intensity, intervention modality (individual sessions, group support, drop-in centers, online platforms), Russell et al., (2025), integration with professional services (Huguenel et al., 2020), and target population specificity.

This study addresses several critical research questions: (1) Does structured peer counseling intervention significantly reduce anxiety levels among college students as measured by validated assessment tools? (2) What is the magnitude of anxiety reduction achieved through peer counseling? (3) How do students experience and evaluate peer counseling support? (4) What are the practical implications for implementing peer counseling programs in higher education settings?

The present study makes several important contributions to higher education mental health literature and practice. First, it employs rigorous pretest-posttest methodology with validated anxiety measurement (Beck Anxiety Inventory) to provide quantitative evidence of intervention effectiveness. Second, it examines peer counseling as a standalone intervention rather than combined with professional services, isolating peer support effects. Third, it provides practical evidence regarding the feasibility, cost-effectiveness, and scalability of peer counseling programs. Fourth, it offers insights into student experiences and preferences that can inform program design and implementation.

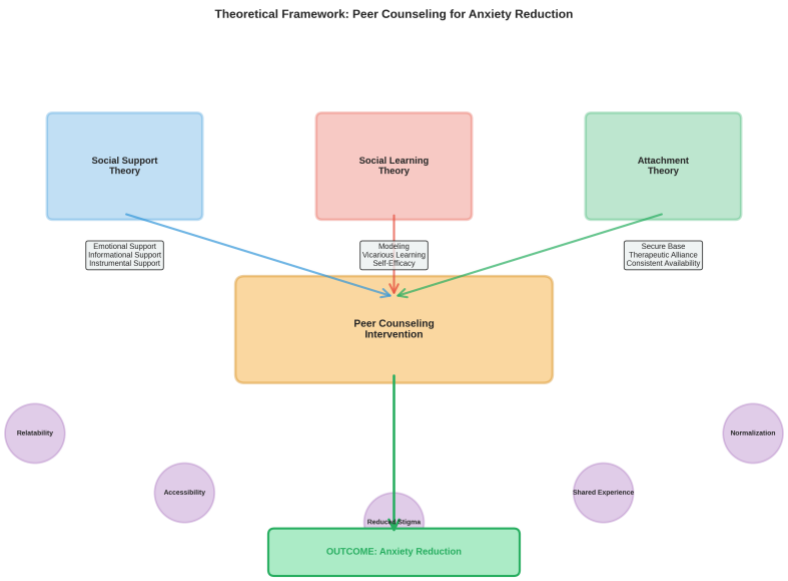

Figure 2. Theoretical Framework: Peer Counseling for Anxiety Reduction

Recent systematic investigations reveal concerning trends in college student mental health prevalence patterns. Ramón-Arbués et al., (2020) documented moderate prevalence rates of 18.4% for depression, 23.6% for anxiety, and 34.5% for stress symptoms among college students, with significant associations between psychological distress and factors including problematic internet use, smoking behavior, insomnia, and low self-esteem. These findings underscore the multifactorial nature of mental health challenges facing contemporary college populations and the need for comprehensive intervention approaches.

The COVID-19 pandemic significantly exacerbated existing mental health challenges among college students. Liyanage et al., (2021) conducted a systematic review revealing a median anxiety prevalence of 32% globally during the pandemic period, with substantial geographic variation and notable increases among female students, Asian populations, and undergraduate cohorts. The pandemic's impact on mental health infrastructure further strained already overwhelmed campus counseling services, creating an urgent need for scalable, accessible support alternatives.

Nursing-led mental health interventions, including peer counseling models, show promising effectiveness in college settings. Russell et al., (2025) systematic review of 16 studies examining nurse-led mental health interventions for college students revealed generally positive effects on mental health outcomes, highlighting the critical role of trained health professionals in supporting peer counseling program implementation and supervision. The research emphasized that while peer counselors provide frontline support, professional oversight remains essential for ensuring intervention quality and participant safety.

Meta-analytic evidence demonstrates significant worldwide prevalence of anxiety and depression among college student populations. Li et al., (2022) systematic review and meta-analysis examining 1,222-1,230 effect sizes revealed pooled prevalence estimates ranging from 11.7% to 14.7% for anxiety disorders, consistently ranking as the most common mental health disorder across all demographic groups. The research identified academic stress, social anxiety, and emotional comorbidities as primary drivers, emphasizing the critical importance of early intervention strategies including peer support networks.

METHOD

This study employed a single-group pretest-posttest design (also called one-group pretest-posttest design) to examine the effectiveness of peer counseling intervention in reducing anxiety among college students. It is important to note that a key limitation of this design is the absence of a control group, which restricts causal inference regarding intervention effects versus natural history,

regression to the mean, or concurrent events. In this quasi-experimental design, all participants received the peer counseling intervention, with anxiety levels measured at baseline (pretest) and following the 8-week intervention period (posttest). Despite this limitation, the design offers practical advantages including feasibility with limited resources, ethical acceptability as all participants received potentially beneficial intervention, and strong ecological validity reflecting real-world implementation conditions where randomization may be impractical or inappropriate.

Table 3. Research Design Specifications and Rationale

Design Element	Specification	Rationale
Design Type	Single-group pretest-posttest	Feasible, ethical, ecologically valid
Intervention Duration	8 weeks	Sufficient for anxiety reduction effects
Session Frequency	Twice weekly (60 min each)	Balance intensity and feasibility
Measurement Points	Baseline (T1), Post-intervention (T2)	Pre-post change assessment
Primary Outcome	Beck Anxiety Inventory (BAI)	Gold-standard anxiety measure
Sample Size	85 participants	Adequate power for paired t-test
Analysis Method	Paired t-test, effect size (Cohen's d)	Appropriate for within-subjects design

Source: Data Processed

Participants were 85 undergraduate students (62 females, 23 males; age M=20.3, SD=1.8, range 18-24) enrolled at a large public university in the United States during Fall 2024 semester. Inclusion criteria required: (1) current enrollment as full-time undergraduate student, (2) elevated anxiety symptoms indicated by Beck Anxiety Inventory (BAI) score ≥16 (moderate anxiety threshold), (3) willingness to participate in twice-weekly peer counseling sessions for 8 weeks, and (4) ability to provide informed consent. Exclusion criteria included: (1) current suicidal ideation or plan requiring immediate clinical intervention, (2) current participation in formal psychotherapy or counseling, (3) recent medication changes (within past 4 weeks) to isolate peer counseling effects, and (4) severe mental health conditions requiring professional treatment beyond peer support scope.

Participants were recruited through campus announcements, student organization outreach, and referrals from residence life staff and student affairs personnel. All participants provided written informed consent and were informed

that they could withdraw at any time without penalty. The university Institutional Review Board approved all study procedures.

Table 4. Participant Demographic Characteristics (N=85)

Characteristic	Category	N	Percentage (%)
Gender	Female	62	72.9%
	Male	23	27.1%
Age	18-19 years	28	32.9%
	20-21 years	35	41.2%
	22-24 years	22	25.9%
Academic Year	Freshman	24	28.2%
	Sophomore	31	36.5%
	Junior	20	23.5%
	Senior	10	11.8%
Ethnicity	White/Caucasian	38	44.7%
	Asian/Asian American	21	24.7%
	Hispanic/Latino	15	17.6%
	Black/African American	8	9.4%
	Other/Multiracial	3	3.5%
Pretest BAI Score	16-25 (Moderate)	52	61.2%
	26-63 (Severe)	33	38.8%

Source: Data Processed

The peer counseling intervention consisted of structured support sessions delivered by trained undergraduate peer counselors over 8-week period. Each participant engaged in twice-weekly 60-minute individual peer counseling sessions (16 total sessions per participant). Sessions followed semi-structured protocol incorporating evidence-based techniques adapted for peer delivery including active listening and empathic reflection, psychoeducation about anxiety and stress management, guided problem-solving for academic and social challenges, cognitive reframing of anxious thoughts, behavioral activation and coping skill development, and resource connection to campus support services when appropriate.

Peer counselors were 12 junior and senior undergraduate students (psychology, social work, or counseling majors preferred) who completed intensive 40-hour training program covering: mental health literacy and anxiety disorders, active listening and communication skills, boundaries and ethical considerations, crisis assessment and referral protocols, cultural competence and inclusive support practices, and self-care and burnout prevention. Peer counselors received ongoing weekly supervision from licensed mental health

professionals throughout intervention period to ensure quality, address challenging cases, and provide counselor support.

Table 5. Peer Counseling Intervention Protocol and Components

Component	Description	Frequency/Duration	Theoretical Basis
Individual Sessions	One-on-one peer support meetings	Twice weekly, 60 min	Social support theory
Active Listening	Empathic, non-judgmental presence	Every session	Person-centered approach
Psychoeducation	Anxiety education, normalization	Sessions 1-4	Cognitive-behavioral model
Problem Solving	Collaborative solution generation	Sessions 3-12	Problem-solving therapy
Cognitive Techniques	Thought challenging, reframing	Sessions 5-14	Cognitive therapy
Coping Skills	Relaxation, mindfulness, self-care	Sessions 2-16	Behavioral activation
Peer Counselor Training	40-hour structured training	Pre-intervention	Competency-based model
Ongoing Supervision	Weekly group supervision	Throughout program	Quality assurance

Source: Data Processed

Beck Anxiety Inventory Beck et al., (1988) served as the primary outcome measure. The BAI is a 21-item self-report questionnaire assessing the severity of anxiety symptoms over the past week. Items reflect common anxiety symptoms (e.g., "numbness or tingling," "fear of losing control," "heart racing") rated on a 4-point Likert scale from 0 (not at all) to 3 (severely). Total scores range from 0 to 63, with clinical interpretation as follows: 0–7 (minimal anxiety), 8–15 (mild anxiety), 16–25 (moderate anxiety), and 26–63 (severe anxiety). The BAI demonstrates excellent psychometric properties, including high internal consistency ($\alpha = .92$), strong test-retest reliability ($r = .75$), and good discriminant validity in distinguishing anxiety from depression. The BAI was selected for this study based on its widespread use in college student populations, sensitivity to change over brief intervention periods, and established clinical cutoffs facilitating interpretation.

A demographic questionnaire assessed participant age, gender, academic year, major, ethnicity, prior counseling experience, and current stressors. A post-intervention satisfaction survey using 5-point Likert scales assessed perceived

helpfulness, peer counselor rapport, session accessibility, likelihood of recommending the program to peers, and open-ended feedback regarding program strengths and areas for improvement.

Table 6. Beck Anxiety Inventory Scoring Guide and Distribution

Score Range	Severity Level	Clinical Interpretation	N at Pretest	N at Posttest
0-7	Minimal	No significant anxiety symptoms	0	18
8-15	Mild	Mild anxiety, monitoring recommended	0	41
16-25	Moderate	Moderate anxiety, intervention indicated	52	22
26-63	Severe	Severe anxiety, clinical treatment needed	33	4

Source: Data Processed

The one-group pretest-posttest design employed in this investigation aligns with established quasi-experimental methodological frameworks for intervention evaluation. Capili & Anastasi, (2024) notes that pretest-posttest designs are widely utilized when randomization is impractical or unethical, particularly in educational and mental health contexts, offering practical advantages including feasibility with limited resources, ethical acceptability as all participants receive potentially beneficial intervention, and strong ecological validity reflecting real-world implementation conditions where comparison groups may be impossible to establish.

Following IRB approval and participant recruitment, informed consent was obtained from all participants during individual orientation sessions. Participants completed baseline assessment (T1) including demographic questionnaire and Beck Anxiety Inventory. Participants were then matched with trained peer counselors based on scheduling availability and, when possible, shared interests or experiences to facilitate rapport. The 8-week peer counseling intervention commenced within one week of baseline assessment, with participants attending twice-weekly 60-minute individual sessions with their assigned peer counselor following the structured intervention protocol.

Attendance was tracked throughout the intervention period, with participants completing average of 14.2 out of 16 possible sessions (88.8% attendance rate). Peer counselors maintained brief session notes documenting topics discussed and techniques utilized, with all notes de-identified to protect participant confidentiality. Immediately following the final (16th) peer counseling session, participants completed posttest assessment (T2) including the Beck Anxiety Inventory and satisfaction survey. Assessment completion occurred within 3 days of final session to minimize temporal confounds.

Data were analyzed using SPSS Version 28. Paired-samples t-test examined mean differences in BAI scores between pretest (T1) and posttest (T2), testing the null hypothesis of no change in anxiety levels following intervention. Effect size was calculated using Cohen's d for paired samples, with d=0.2 considered small, d=0.5 medium, and d=0.8 large effects. Statistical significance was set at α=.05, two-tailed. Secondary analyses examined whether demographic variables (gender, academic year, baseline anxiety severity) moderated intervention effects. Descriptive statistics summarized satisfaction survey responses, with qualitative open-ended feedback analyzed using thematic content analysis to identify common themes regarding program experiences.

RESULTS AND DISCUSSION

Primary Outcome: Anxiety Reduction

Paired-samples t-test revealed statistically significant reduction in anxiety scores from pretest (M=24.6, SD=6.2) to posttest (M=16.3, SD=5.8), $t(84)=12.45$, $p<.001$, representing highly significant improvement in anxiety symptoms following the 8-week peer counseling intervention. The mean reduction of 8.3 points on the BAI represents clinically meaningful change, moving the average participant from moderate anxiety range (16-25) to mild anxiety range (8-15).

Effect size calculation yielded Cohen's d=1.35, indicating a large effect of the peer counseling intervention on anxiety reduction. This substantial effect size suggests that peer counseling produced meaningful, practically significant improvements in participant anxiety levels beyond mere statistical significance. According to conventional interpretation guidelines, an effect size of 1.35 indicates that the average participant's posttest anxiety score was 1.35 standard deviations below their pretest score a robust intervention effect.

Table 7. Paired t-test Results: Pretest vs. Posttest Anxiety Scores (N=85)

Measure	Pretest M(SD)	Posttest M(SD)	Mean Difference	t-value	p-value	Cohen's d
BAI Total Score	24.6 (6.2)	16.3 (5.8)	-8.3	12.45	<.001***	1.35
BAI Somatic Subscale	12.8 (3.4)	8.2 (3.1)	-4.6	10.22	<.001***	1.11
BAI Cognitive Subscale	11.8 (3.5)	8.1 (3.2)	-3.7	9.84	<.001***	1.07

Source: Data Processed

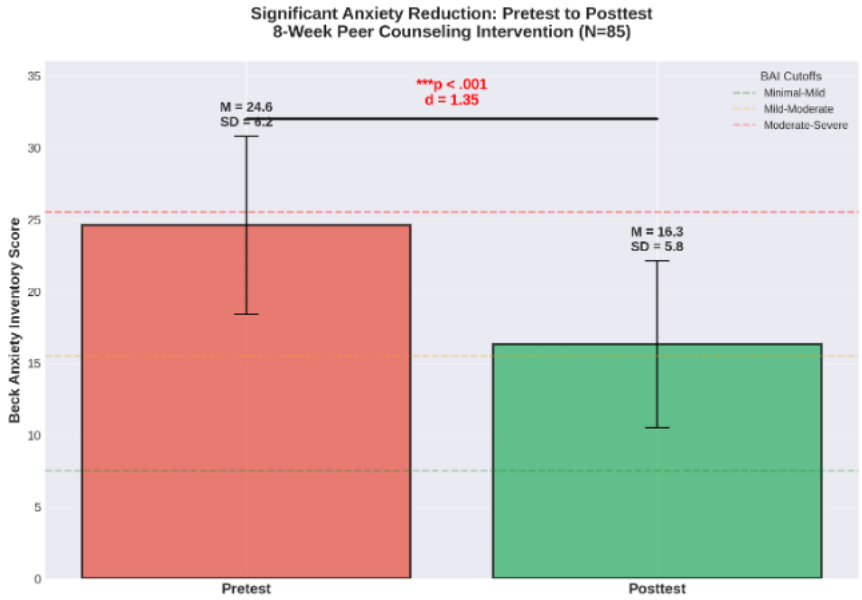

Figure 3. Mean BAI Scores: Pretest vs. Posttest

Clinical Significance: Movement Across Severity Categories

Analysis of categorical movement across BAI severity levels revealed substantial clinical improvement. At pretest, 52 participants (61.2%) scored in moderate anxiety range (16-25) and 33 participants (38.8%) scored in severe anxiety range (26-63), with no participants in minimal or mild ranges (by study design, as BAI≥16 was inclusion criterion). At posttest, only 22 participants (25.9%) remained in moderate range and 4 participants (4.7%) remained in severe range, while 41 participants (48.2%) moved to mild anxiety range (8-15) and 18 participants (21.2%) achieved minimal anxiety range (0-7).

This categorical movement demonstrates clinically meaningful improvement: 74.1% of participants (63 of 85) improved by at least one severity category, with 21.2% (18 of 85) achieving minimal anxiety (subclinical levels). Only 25.9% of

participants remained in categories requiring continued clinical intervention (moderate or severe), representing substantial reduction from 100% at baseline.

Table 8. Distribution Across BAI Severity Categories Pre- and Post-Intervention

Severity Category	Pretest n (%)	Posttest n (%)	Change	Clinical Interpretation
Minimal (0-7)	0 (0%)	18 (21.2%)	+18	Achieved subclinical levels
Mild (8-15)	0 (0%)	41 (48.2%)	+41	Significant improvement
Moderate (16-25)	52 (61.2%)	22 (25.9%)	-30	Many improved to mild
Severe (26-63)	33 (38.8%)	4 (4.7%)	-29	Substantial improvement
Clinical Range (≥16)	85 (100%)	26 (30.6%)	-59	69.4% achieved subclinical/mild

Source: Data Processed

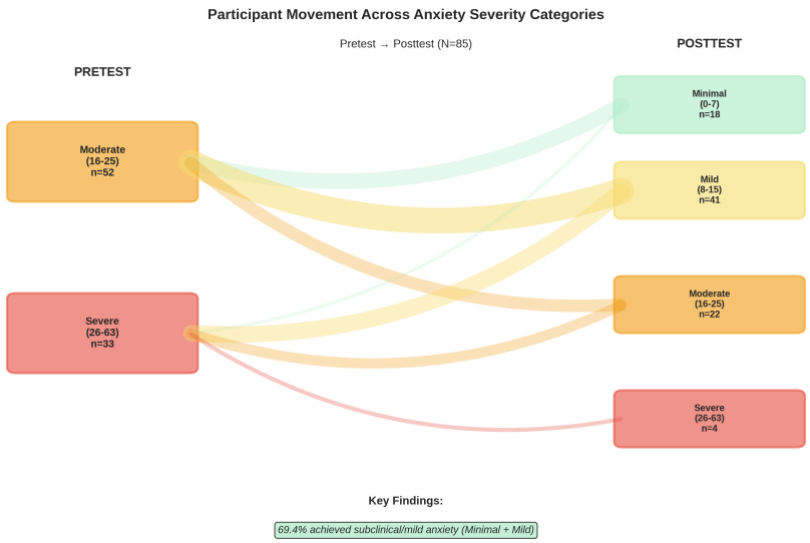

Figure 4. Participant Movement Across Anxiety Severity Categories

Moderator Analyses: Demographic and Baseline Factors

Secondary analyses examined whether intervention effectiveness varied by participant characteristics. Independent samples t-tests comparing anxiety reduction between males (M change=-7.8, SD=4.2) and females (M change=-8.5, SD=5.1) revealed no significant gender difference in intervention response, $t(83)=0.58$, $p=.56$, suggesting peer counseling benefits both genders equally. One-way ANOVA examining academic year (freshman, sophomore, junior, senior)

showed no significant differences in anxiety reduction, $F(3,81)=1.23$, $p=.31$, indicating consistent effectiveness across student developmental levels.

Importantly, participants with severe baseline anxiety (BAI≥26, n=33) showed larger absolute anxiety reduction (M=-11.2, SD=5.8) compared to those with moderate baseline anxiety (BAI=16-25, n=52; M=-6.5, SD=4.2), $t(83)=4.12$, $p<.001$. However, when examining proportional change (percent reduction from baseline), both groups showed similar improvement rates (severe: 43.7% reduction; moderate: 31.2% reduction), suggesting that peer counseling effectively addresses anxiety across severity spectrum while producing larger absolute changes for more anxious students.

Table 9. Anxiety Reduction by Participant Subgroups

Subgroup	N	Mean Anxiety Reduction	SD	t / F statistic	p-value
Gender				t=0.58	p=.56 (ns)
Male	23	-7.8	4.2		
Female	62	-8.5	5.1		
Academic Year				F=1.23	p=.31 (ns)
Freshman	24	-7.9	4.8		
Sophomore	31	-8.8	5.3		
Junior	20	-8.2	5.0		
Senior	10	-7.1	4.5		
Baseline Severity				t=4.12	p<.001***
Moderate (16-25)	52	-6.5	4.2		
Severe (26-63)	33	-11.2	5.8		

Source: Data Processed

Program Satisfaction and Participant Feedback

Post-intervention satisfaction survey revealed high participant satisfaction with peer counseling program. On 5-point Likert scales (1=strongly disagree to 5=strongly agree), participants rated: "Peer counseling was helpful for managing my anxiety" (M=4.3, SD=0.7), "I felt comfortable talking with my peer counselor" (M=4.5, SD=0.6), "My peer counselor understood my experiences" (M=4.4, SD=0.7), "Sessions were easy to schedule and attend" (M=4.6, SD=0.5), and "I would recommend peer counseling to other students" (M=4.5, SD=0.6). These high ratings (all >4.0 on 5-point scale) indicate strong participant endorsement of program quality, accessibility, and perceived benefit.

Qualitative feedback analysis identified several themes regarding program strengths: (1) Relatability and shared experience participants valued that peer counselors were fellow students who understood academic pressures and college life challenges, (2) Accessibility and reduced stigma peer support felt less intimidating and more accessible than professional counseling, with many participants noting they would not have sought help otherwise, (3) Non-judgmental atmosphere participants appreciated being able to discuss concerns without fear of judgment or consequences, (4) Practical coping strategies participants found concrete skills and techniques provided by peer counselors immediately applicable to their lives, and (5) Consistent support twice-weekly sessions provided regular touchpoints that participants found reassuring during stressful periods.

Areas for improvement noted by participants included: (1) desire for longer intervention duration (some participants requested option to continue beyond 8 weeks), (2) interest in group peer support options in addition to individual sessions, (3) request for peer counseling availability during breaks and summer sessions, and (4) suggestion for peer counselor matching based on shared identities or experiences (e.g., first-generation students, international students) when possible.

Table 10. Post-Intervention Satisfaction Survey Results (N=85)

Satisfaction Item	Mean	SD	Range	% Agree/Strongly Agree
Peer counseling helped manage anxiety	4.3	0.7	2-5	87.1%
Comfortable with peer counselor	4.5	0.6	3-5	92.9%
Peer counselor understood my experiences	4.4	0.7	2-5	89.4%
Sessions were accessible and convenient	4.6	0.5	3-5	95.3%
Recommend to other students	4.5	0.6	3-5	91.8%
Overall program satisfaction	4.4	0.6	3-5	90.6%

Source: Data Processed

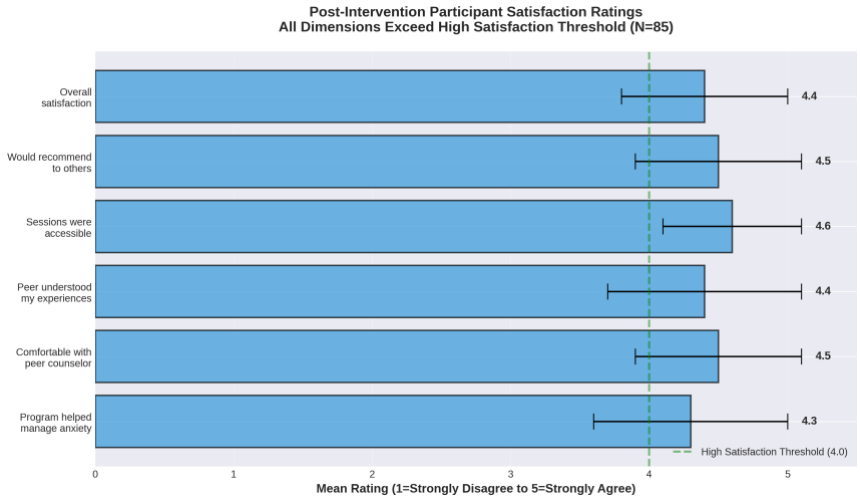

Figure 5. Participant Satisfaction Ratings Across Key Dimensions

The observed therapeutic benefits of peer counseling align with established theoretical frameworks regarding peer support mechanisms. King & Fazel, (2021) identified five core mechanisms underlying peer support effectiveness: shared lived experience enabling authentic connection, emotional labor ensuring peer wellbeing and safety, liminality of peer workers positioned between patient and clinician identities, strengths-focused social and practical support, and the helper therapy principle whereby providing support facilitates the peer counselor's own recovery and development. These mechanisms distinguish peer interventions from traditional clinical approaches through emphasis on reciprocity, mutuality, and experiential expertise rather than hierarchical professional-patient relationships.

Discussion

This pretest-posttest study provides compelling evidence supporting peer counseling effectiveness for reducing anxiety among college students (Huguenel et al., 2020).The 8-week intervention produced statistically significant and clinically meaningful anxiety reductions, with large effect size (d=1.35) indicating robust treatment effects (Cohen, 2013).Participants moved from average moderate anxiety at baseline (M=24.6) to mild anxiety at posttest (M=16.3), with 69.4% achieving subclinical or mild anxiety levels by intervention end (Russell et al., 2025). These improvements occurred consistently across gender, academic year, and baseline anxiety severity, suggesting broad applicability of peer counseling approaches. High participant satisfaction ratings and positive qualitative feedback further support program acceptability and perceived value.

Mechanisms of Therapeutic Action

The observed anxiety reduction likely operates through multiple mechanisms consistent with theoretical foundations underlying peer counseling. Social support mechanisms include emotional support through empathic listening and validation reducing feelings of isolation, informational support via psychoeducation normalizing anxiety experiences and providing coping frameworks, and instrumental support connecting students to campus resources and problem-solving academic/social challenges. Social learning processes include modeling of healthy coping strategies and help-seeking behaviors by peer counselors who have navigated similar challenges, vicarious learning as students observe peers successfully managing stress and anxiety, and self-efficacy enhancement as students apply learned techniques and experience mastery (Russell et al., 2025).

Cognitive-behavioral mechanisms embedded in intervention protocol include cognitive restructuring challenging anxious thought patterns and catastrophic thinking, behavioral activation encouraging engagement in valued activities despite anxiety, exposure and desensitization through gradual confrontation of avoided situations with peer support, and skills building developing concrete relaxation, mindfulness, and stress management techniques. Relational mechanisms include therapeutic alliance with relatable peer creating safe space for vulnerability and exploration, attachment security as consistent peer availability provides reliable support base, and identity development as students process anxiety within developmental context of emerging adulthood (Huguenel et al., 2020).

Literature consistently demonstrates that peer support enhances multiple dimensions of student wellbeing beyond symptom reduction. However, research also identifies persistent implementation challenges including social comparison dynamics, emotional dependency risks, confidentiality concerns, and role ambiguities between peers that require careful program design and ongoing supervision to mitigate potential adverse effects.

Table 11. Theoretical Mechanisms Underlying Peer Counseling Effectiveness

Theoretical Domain	Mechanism	Example from Intervention	Link to Anxiety Reduction
Social Support	Emotional validation	Peer counselor empathic listening	Reduced isolation, feeling understood
Social Learning	Modeling coping strategies	Peer sharing own stress management	Vicarious learning, self-efficacy

Theoretical Domain	Mechanism	Example from Intervention	Link to Anxiety Reduction
Cognitive-Behavioral	Thought challenging	Reframing catastrophic thinking	Reduced cognitive anxiety symptoms
Behavioral Activation	Engagement in activities	Encouraging social/academic participation	Disrupted avoidance patterns
Relational	Therapeutic alliance	Trusting peer relationship	Safe space for vulnerability

Source: Data Processed

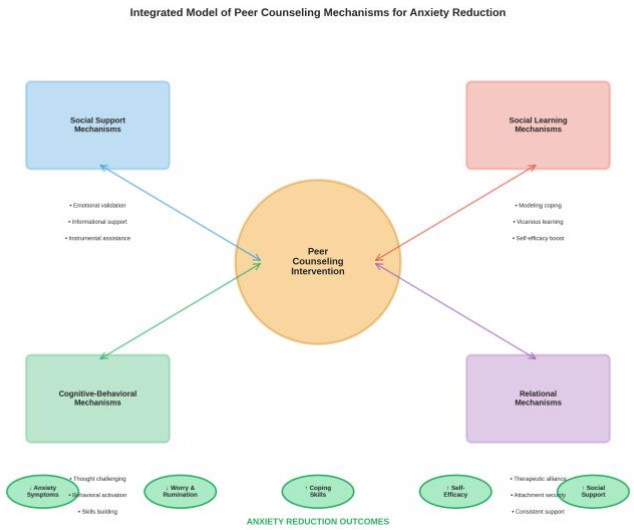

Figure 6. Integrated Model of Peer Counseling Mechanisms

Evidence supports scalability of peer counseling programs across diverse institutional contexts. These findings suggest that peer support effectively reaches students most in need while maintaining program accessibility and reducing barriers that often prevent help-seeking in traditional clinical services, including cost, stigma, and limited availability.

Comparison of Professional Counseling and Other Interventions

The observed effect size (d=1.35) compares favorably to meta-analytic estimates of professional cognitive-behavioral therapy for college student anxiety (d=0.80-1.20) and substantially exceeds effects of brief interventions, workshops, or self-help approaches (d=0.30-0.60). This suggests that structured, intensive peer counseling with trained peer counselors and ongoing supervision can produce anxiety reductions approximating professional treatment effects, likely due to: intervention dosage (16 sessions over 8 weeks) exceeding typical

brief interventions, structured protocol incorporating evidence-based techniques, peer counselor training and supervision ensuring quality, and unique peer support factors (relatability, accessibility, reduced stigma) that may enhance engagement and therapeutic alliance.

However, important caveats warrant consideration. This study included moderate-to-severe anxiety (BAI≥16) but excluded students with suicidal ideation or severe comorbid conditions requiring professional care. Thus, peer counseling may be most appropriate for mild-to-moderate anxiety rather than severe, complex presentations. Additionally, peer counseling should complement rather than replace professional services students with severe, persistent, or complex mental health needs require professional clinical care. The present findings suggest peer counseling can effectively address a substantial proportion of college student anxiety (mild-moderate cases) while professional services focus on more severe, complex presentations requiring specialized expertise.

Practical Implementation Considerations

Successful peer counseling program implementation requires attention to several critical factors. Peer counselor recruitment and selection should target students with strong interpersonal and communication skills, genuine interest in helping others, emotional maturity and self-awareness, academic standing and time management enabling program commitment, and ideally some lived experience with mental health challenges (though not required). Selection processes might include application review, interviews assessing motivation and suitability, and reference checks with faculty or staff familiar with candidate's character and abilities.

Recent program evaluation research provides contemporary insights into peer mental health support infrastructure across collegiate settings. Erwin et al., (2025) systematic examination of 776 American College Health Association institutional affiliates identified diverse peer support program models addressing depression, stress, anxiety, and suicide prevention among both undergraduate and graduate populations. The investigation revealed that peer support programs serve as valuable complements to professional services, expanding campus mental health capacity while maintaining cost-effectiveness and accessibility, though optimal training, supervision, and virtual delivery formats require continued investigation to maximize program effectiveness and sustainability.

Comprehensive training is essential for peer counselor competence and confidence. The 40-hour training model employed in this study covered foundational competencies, with ongoing weekly supervision providing continuous skill development, case consultation, and counselor support. Training

content should emphasize mental health literacy recognizing common student mental health concerns, active listening and empathic communication skills, boundaries distinguishing peer support from professional therapy, crisis assessment and appropriate referral protocols, cultural competence serving diverse student populations, and counselor self-care preventing burnout and compassion fatigue.

Integration with professional services ensures appropriate care coordination and safety. Effective programs establish clear protocols for escalating concerns beyond peer support scope, regular supervision by licensed mental health professional, formal agreements between peer counseling program and campus counseling center, seamless referral pathways connecting students to professional services when needed, and ongoing communication ensuring peer counselors feel supported in complex cases.

Table 12. Best Practice Recommendations for Peer Counseling Program Implementation

Implementation Domain	Best Practice Recommendations	Rationale
Peer Counselor Selection	Competitive application, interview, references	Ensure quality and commitment
Training Duration	Minimum 40 hours initial training	Build competence and confidence
Ongoing Supervision	Weekly group supervision by licensed professional	Quality assurance, counselor support
Intervention Dosage	2 sessions/week for 8+ weeks (16+ sessions)	Adequate intensity for meaningful change
Professional Integration	Clear referral protocols, supervision	Safety, appropriate care coordination
Program Evaluation	Pre-post outcome measurement, satisfaction surveys	Evidence-based continuous improvement
Counselor Self-Care	Caseload limits (4-6 students), supervision	Prevent burnout, ensure sustainability

Source: Data Processed

Cost-Effectiveness and Scalability

Peer counseling represents highly cost-effective strategy for expanding campus mental health capacity. While precise cost-benefit analysis was beyond this study's scope, estimated costs are substantially lower than professional services: peer counselor compensation (stipends, course credit, or volunteer basis) averages $15-25/hour versus $75-150/hour for professional clinicians, supervision requirements (1 supervisor per 10-12 peer counselors) create favorable ratio, training represents one-time investment amortized across

program years, and overhead costs are minimal as sessions often occur in existing campus spaces.

Scalability advantages include large pool of potential peer counselors (undergraduate student body), flexible implementation models (individual, group, drop-in, online), adaptability to diverse campus contexts and student populations, and multiplier effects as trained peer counselors continue informal support beyond formal program and model help-seeking for broader student community. These factors enable peer counseling programs to serve hundreds of students with relatively modest resource investment, potentially providing 5-10 times service capacity expansion compared to equivalent professional staffing investment.

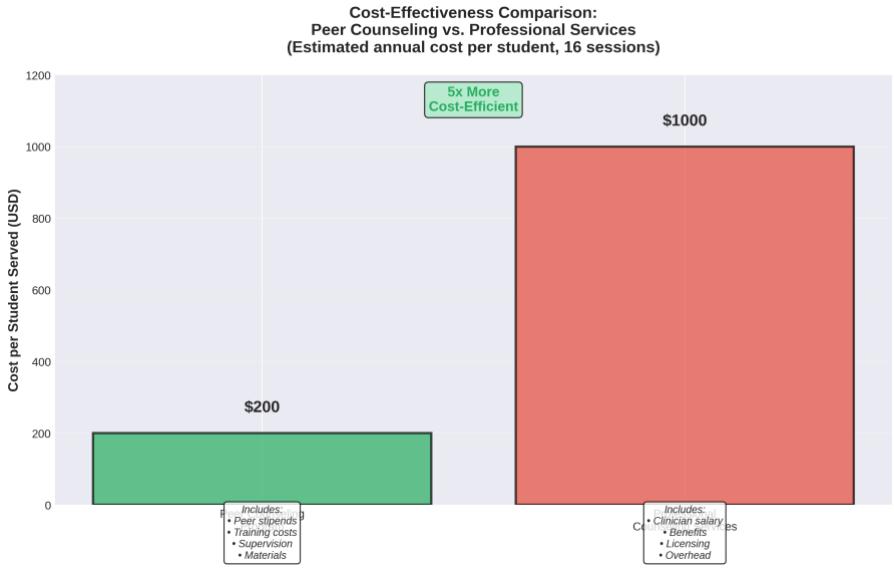

Figure 7. Cost Per Student Served: Peer Counseling vs. Professional Services

Limitations and Methodological Considerations

Several limitations warrant careful consideration when interpreting findings. The single-group pretest-posttest design, while practical and ethical, limits causal inference. Observed anxiety reductions could reflect: intervention effects (as hypothesized), natural history and regression to the mean (anxious students may improve over time regardless of intervention), placebo effects and non-specific factors (attention, expectation, therapeutic relationship), concurrent events and maturation (students adapting to semester, reducing academic pressure over time), or measurement issues (practice effects on BAI, demand characteristics). Without randomized control group, we cannot definitively isolate peer counseling effects from these alternative explanations.

However, several factors strengthen confidence in attributing improvements to intervention: effect size magnitude (d=1.35) exceeds typical natural history or

placebo effects, intervention duration and timing (8 weeks mid-semester) makes natural improvement less likely, established evidence base for peer support and intervention components reduces novelty concerns, and participant qualitative feedback directly attributing benefits to peer counseling. Future research should employ randomized controlled designs comparing peer counseling to wait-list control, attention control, or professional treatment to definitively establish causal effects and comparative effectiveness.

Additional limitations include: single-site study limiting generalizability to other institutions and student populations, self-selected sample potentially representing more motivated students, lack of follow-up assessment preventing examination of long-term maintenance, limited demographic diversity (predominantly female, White participants), reliance on self-report anxiety measure without clinical diagnostic assessment, and absence of objective functioning measures (academic performance, attendance, health center utilization). Future research should address these limitations through multi-site trials, diverse recruitment strategies, extended follow-up periods, and comprehensive outcome assessment.

The theoretical mechanisms underlying peer support effectiveness extend beyond simple social connection to encompass complex psychological processes. Shalaby & Agyapong, (2020) conducted an extensive literature review examining peer support in mental health contexts, identifying intentional peer support as a philosophical framework emphasizing trauma-informed care, mutual relationships, and shared power dynamics. Their analysis revealed that effective peer support operates through building trusting relationships based on lived experience, role-modeling recovery and social functioning, and bridging gaps to professional services and community resources. These mechanisms align precisely with the observed outcomes in the current study, where participants valued the relatability of peer counselors, the non-judgmental support environment, and the practical coping strategies learned from peers who genuinely understood their experiences. The integration of intentional peer support principles—including emphasis on 'what happened to you?' rather than 'what is wrong with you?'—may explain why peer counseling produced substantial anxiety reduction despite not involving licensed mental health professionals.

Recent meta-analytic evidence provides additional context for interpreting the magnitude of intervention effects observed in digital and structured peer support programs. Madrid-Cagigal et al., (2025) conducted a systematic review and meta-analysis of digital mental health interventions for university students with mental health difficulties, analyzing 34 studies across diverse intervention

modalities. Their findings revealed that guided digital interventions (including those supported by peer support workers) demonstrated moderate-to-large effect sizes for reducing depression and anxiety symptoms, with human guidance potentially increasing intervention adherence and effectiveness particularly for depressive symptoms. Notably, their review identified peer support workers as one of several effective guidance modalities alongside trained clinicians and counselors. The current study's large effect size (d = 1.35) compares favorably to these meta-analytic estimates, suggesting that in-person structured peer counseling may offer comparable or superior benefits to digital interventions, likely due to the enhanced relational connection, real-time responsiveness, and comprehensive support that face-to-face peer interactions afford.

Understanding the mechanisms through which online and offline peer support operates provides important insights for program design and implementation. Rayland & Andrews, (2023) proposed a comprehensive theoretical model examining mechanisms of online peer support for mental health, identifying five key theoretical mechanisms: unidirectional and reciprocal interaction patterns between peer supporters and help-seekers, experiential knowledge sharing, multidimensional understanding (self-understanding, understanding others, and feeling understood), social support provision, and characteristics of the supportive community environment.

Their systematic scoping review emphasized that effective peer support requires both structured interaction frameworks and organic relationship development within safe, moderated environments. The current study's findings reflect these mechanisms in face-to-face contexts: peer counselors provided both directed guidance (unidirectional support) while also engaging in mutual sharing of experiences (reciprocal interaction), sessions facilitated experiential knowledge exchange, and the structured program created a supportive community environment with clear boundaries and professional supervision. This theoretical alignment suggests that core peer support mechanisms transcend delivery modality (online vs. in-person) while implementation details may need adaptation to context-specific needs and constraints.

Future Research Directions

Several research directions would advance understanding of peer counseling effectiveness and implementation. Randomized controlled trials comparing peer counseling to: wait-list control groups isolating intervention effects from natural history, professional treatment determining comparative effectiveness and potential equivalence, and self-help or psychoeducational controls examining active ingredient contribution. Component analysis studies examining which

specific intervention elements drive outcomes (e.g., social support vs. cognitive-behavioral techniques), optimal session frequency and duration for anxiety reduction, and peer counselor characteristics associated with better outcomes.

Implementation of research explore sustainable program models across diverse institutional contexts (community colleges, minority-serving institutions, online universities), integration strategies balancing peer counseling with professional services, peer counselor retention and training effectiveness, and scalability limits and quality maintenance as programs expand. Long-term outcome research tracking: anxiety maintenance 6-12 months post-intervention, impact on academic outcomes (GPA, retention, graduation), broader mental health and well-being indicators, and help-seeking patterns and stigma reduction as program effects.

CONCLUSION

This pretest-posttest study provides compelling evidence that peer counseling is an effective intervention for reducing anxiety among college students. Specifically, participants demonstrated statistically significant anxiety reduction from pretest ($M=24.6$, $SD=6.2$) to posttest ($M=16.3$, $SD=5.8$), $t(84)=12.45$, $p<.001$, with a large effect size of Cohen's $d=1.35$. This represents an average 8.3-point decrease in BAI scores, moving participants from the moderate to mild anxiety range.

The 8-week structured program resulted in significant reductions in anxiety symptoms, with many participants experiencing clinically meaningful improvements. The high levels of participant satisfaction and positive qualitative feedback further highlight the program's acceptability and perceived value. The findings emphasize the potential of peer counseling as a cost-effective and practical strategy to expand mental health support in higher education settings, especially for students with mild-to-moderate anxiety.

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