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Comparison of the Effectiveness of Short-Term Psychodynamic Therapy and Integrated Acceptance and Commitment Therapy with Schema Therapy on Sleep Quality and Disability Caused by Tension-Type Headache in Insecurely Attached Nurses with Anxiety Symptoms

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A B S T R A C T

Nurses working in intensive, emergency, and oncology settings are exposed to persistent emotional, cognitive, and physical demands. In nurses with insecure attachment and anxiety symptoms, these demands may be expressed through sleep disturbance and disabling tension-type headache. This study compared the effectiveness of short-term psychodynamic therapy and an integrated acceptance and commitment therapy with schema therapy intervention on sleep quality and tension-type headache-related disability in insecurely attached nurses with anxiety symptoms. A quasi-experimental pre-test-post-test design with a wait-list control group and one-month follow-up was used. The population consisted of nurses employed in ICU, CCU, emergency, and oncology wards of Imam Reza Hospital, Mashhad, Iran, during the second half of 1403 SH. From 420 eligible nurses, 180 volunteered for screening; 70 had anxiety scores above the cut-off on DASS-21, 40 also showed predominant insecure attachment, and 30 met all inclusion criteria. Participants were randomly assigned to short-term psychodynamic therapy (n = 10), integrated acceptance and commitment therapy with schema therapy (n = 10), or wait-list control (n = 10). Both active interventions were delivered in eight 70-minute sessions. Outcome measures were the Pittsburgh Sleep Quality Index and the Headache Disability Inventory. Data were analyzed using multivariate and univariate analysis of covariance and Bonferroni post hoc tests. Results: After controlling for pre-test scores, the overall multivariate group effect was significant for sleep quality, Wilks' Lambda = .49, F(4, 50) = 5.43, p = .001, partial eta squared = .30, and for headache disability, Wilks' Lambda = .30, F(8, 44) = 4.50, p = .001, partial eta squared = .45. Group effects were significant for sleep quality at post-test and follow-up and for both emotional and functional dimensions of headache disability at post-test and follow-up. Adjusted Bonferroni comparisons indicated significant advantages of the psychodynamic group over the control group for sleep quality at post-test and follow-up, and significant advantages of both active interventions over control for headache disability. For headache disability, the adjusted pairwise comparisons indicated larger reductions in the psychodynamic condition than in the integrated treatment condition across post-test and follow-up. Both active

interventions were associated with improvements in sleep quality and tension-type headache-related disability; however, the adjusted inferential results suggested a stronger effect of short-term psychodynamic therapy on headache-related disability in this sample. The findings support the clinical relevance of emotion-focused and schema/acceptance-based interventions for anxious, insecurely attached nurses, while emphasizing the need for replication with larger samples and longer follow-up.
Keywords: *short-term psychodynamic therapy; intensive short-term dynamic psychotherapy; acceptance and commitment therapy; schema therapy; sleep quality; tension-type headache; insecure attachment; nurses; anxiety*

1. Introduction

Nursing in high-acuity hospital wards is emotionally and physiologically demanding. Nurses in intensive care, emergency, coronary care, and oncology units often work under time pressure, deal with suffering and death, and rotate between day and night duties. These conditions can disrupt sleep and increase somatic tension, particularly in individuals who already show anxiety symptoms and insecure attachment patterns. In this context, sleep problems and tension-type headache are not only personal health concerns; they may also interfere with concentration, occupational functioning, communication, and the quality of patient care.

Tension-type headache is one of the most common primary headache disorders and is characterized by pressing or tightening pain that is usually bilateral and mild to moderate in intensity. The International Classification of Headache Disorders provides the clinical framework for distinguishing tension-type headache from other primary and secondary headache conditions (1). Although the biological mechanisms of tension-type headache are complex, psychological stress, emotional suppression, anxiety, sleep disturbance, and muscular tension are frequently discussed as relevant maintaining factors. Sleep disturbance and headache burden can also reinforce one another, creating a cycle in which poor sleep increases pain sensitivity and recurrent pain further disrupts sleep (2).

Sleep quality is especially important in nurses because shift work can disturb circadian rhythm and recovery. The Pittsburgh Sleep Quality Index (PSQI) is one of the most widely used measures of subjective sleep quality, and its original validation demonstrated its usefulness for psychiatric and clinical research (3). Systematic evidence has also shown that shift-work nurses frequently experience impaired sleep and that sleep interventions may improve not only sleep outcomes but also fatigue, stress, and work-related functioning (4). In hospital settings, sleep impairment may therefore act as both an outcome of occupational strain and a contributor to poorer functioning.

Attachment theory provides another useful framework for understanding vulnerability to occupational stress. Bowlby (1988) proposed that early attachment experiences shape internal working models of self and others (5). Adult attachment research has further distinguished secure and insecure patterns, including anxious and avoidant attachment styles (6). Insecurely attached individuals may have greater difficulty regulating emotions, requesting support, and processing interpersonal stress. In a high-pressure clinical environment, these difficulties may intensify anxiety, rumination, bodily tension, and sleep disturbance.

Psychological interventions may reduce these symptoms through different mechanisms. Short-term psychodynamic therapy, particularly intensive short-term dynamic psychotherapy (ISTDP), emphasizes access to avoided emotions, clarification of defenses, and working through unconscious conflict. Meta-analytic evidence supports the usefulness of short-term psychodynamic psychotherapies for common mental disorders, and ISTDP has been examined for a range of emotional and somatic symptom presentations (7, 8). For patients whose somatic symptoms are closely related to unresolved affect and defensive avoidance, psychodynamic work may reduce physiological tension by improving emotional processing.

Acceptance and commitment therapy (ACT) is based on psychological flexibility and aims to help individuals accept difficult private experiences while acting consistently with personal values (9). Meta-analytic evidence indicates that ACT can be effective across clinically relevant mental and physical health problems (10). Schema therapy, in turn, focuses on early maladaptive schemas and enduring

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emotional-cognitive patterns (11). Integrating ACT with schema therapy may therefore be clinically meaningful for insecurely attached nurses because it targets both present-moment experiential avoidance and long-standing schemas related to defectiveness, deprivation, self-sacrifice, or fear of abandonment.

Despite the theoretical relevance of these two approaches, direct comparative evidence in nurses with insecure attachment and anxiety symptoms is limited. The present study therefore compared the effects of short-term psychodynamic therapy and an integrated ACT-schema therapy intervention on sleep quality and tension-type headache-related disability in this vulnerable occupational group. The study used a pre-test-post-test design with wait-list control and one-month follow-up.

2. Methods and Materials

2.1. Design

This study used a quasi-experimental pre-test-post-test design with two active intervention groups, one wait-list control group, and a one-month follow-up. The active interventions were short-term psychodynamic therapy and integrated acceptance and commitment therapy with schema therapy. The control group received no intervention during the study period and was placed on a wait list.

2.2. Participants and setting

The statistical population included all nurses working in the ICU, CCU, emergency, and oncology wards of Imam Reza Hospital, Mashhad, Iran, during the second half of 1403 SH. According to hospital nursing administration records, approximately 420 nurses were employed in the target wards during the implementation period: ICU (n = 150), CCU (n = 70), emergency (n = 120), and oncology (n = 80). These wards were selected because of their higher level of occupational stress compared with routine wards.

The sampling process was conducted step by step. First, 180 nurses volunteered for screening. They completed the Depression Anxiety Stress Scales-21 and the Persian attachment style questionnaire used in the research protocol. Of these volunteers, 70 scored above the anxiety cut-off. Among these 70 nurses, 40 also showed a predominant insecure attachment style. Finally, 30 nurses who satisfied all inclusion criteria and provided written informed consent were selected and randomly assigned by drawing lots to three groups of 10 participants each.

2.3. Inclusion and exclusion criteria

Inclusion criteria were: a score above 10 on the anxiety subscale of DASS-21, predominant insecure attachment according to the attachment questionnaire used in the study protocol, at least a bachelor's degree in nursing, at least one year of work experience in ICU, CCU, emergency, or oncology wards, no psychiatric medication use during the previous three months based on self-report, and no concurrent psychological treatment during the study. Exclusion criteria were withdrawal of consent, absence from more than two intervention sessions, and emergence of acute psychiatric crisis requiring immediate specialized care.

2.4. Measures

Depression Anxiety Stress Scales-21 (DASS-21). DASS-21 is a 21-item self-report measure designed to assess depression, anxiety, and stress symptoms. Each subscale contains seven items rated from 0 to 3. In this study, the anxiety subscale was used for screening. The DASS was developed by Lovibond and Lovibond (1995) (12), and more recent evidence supports the psychometric adequacy of the Persian version among Iranian health professionals (13). In the present sample, Cronbach's alpha for the scale was .86.

Attachment style questionnaire. The Persian attachment questionnaire used in the study protocol assessed insecure adult attachment patterns. Participants whose insecure attachment score was dominant and met the protocol-defined criterion were considered eligible. The conceptual basis of the attachment classification was consistent with adult attachment theory and the four-category adult attachment model (5, 6). Because this attachment instrument is a local Persian measure with limited international indexing, the screening procedure is reported descriptively and the instrument is acknowledged as a methodological limitation.

Headache Disability Inventory (HDI). The HDI was developed to measure the perceived burden of headache on emotional and functional aspects of daily life (14). The questionnaire contains emotional and functional dimensions, with higher scores indicating greater disability. The Persian version of the Henry Ford Hospital HDI has also been

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validated in Iranian patients (15). In the present sample, Cronbach's alpha was .68.

Pittsburgh Sleep Quality Index (PSQI). The PSQI is a self-report measure of sleep quality over the previous month. It includes seven component scores, and higher total scores indicate poorer sleep quality (3). Evidence supports the reliability and validity of the Persian PSQI (16). In the present sample, Cronbach's alpha was .79.

2.5. Interventions

Short-term psychodynamic therapy. The psychodynamic intervention was based on the principles of intensive short-term dynamic psychotherapy as developed in the Davanloo tradition (17) and supported by subsequent outcome syntheses (7, 8). It was implemented in eight 70-minute sessions, two sessions per week. The protocol focused on establishing a safe therapeutic alliance, identifying anxiety triggers in hospital work, naming avoided emotions, challenging maladaptive defenses such as excessive intellectualization and emotional detachment, exploring transference patterns in relation to authority figures, processing unconscious conflicts related to caregiving and self-worth, and consolidating self-care and relapse-prevention strategies. The intervention was delivered by the researcher and a clinical psychology master's-level therapist trained in this method.

Integrated acceptance and commitment therapy with schema therapy. The integrated intervention was also delivered in eight 70-minute sessions, two sessions per week. It combined mindfulness and acceptance processes from ACT (9, 10) with schema awareness and schema modification techniques (11). The sessions addressed mindfulness in stressful clinical environments, identification of self-sacrifice and perfectionistic schemas, values-based decisions, conflict between self-care and caring for others, avoidance patterns in the workplace, assertive help-seeking, committed action, and relapse prevention. The intervention was delivered by the researcher and a master's-level psychologist certified in ACT.

2.6. Procedure and ethical considerations

The study was approved by the Ethics Committee of Islamic Azad University, Birjand Branch, under the code IR.IAU.BIRJAND.REC.1403.038. Permission was obtained from Imam Reza Hospital, Mashhad. Nurses were informed about the purpose of the study, confidentiality of information, voluntary participation, and their right to withdraw at any stage without consequences. Written informed consent was obtained before screening. Data were coded anonymously, and questionnaires were stored securely. The control group was promised a free educational workshop after completion of the research period.

2.7. Statistical analysis

Data were analyzed with SPSS version 22. Descriptive statistics were used to summarize demographic characteristics and outcome scores. Shapiro-Wilk tests, Levene's tests, Box's M tests, and tests of homogeneity of regression slopes were used to examine assumptions. Multivariate analysis of covariance and univariate analyses of covariance were then conducted, controlling for pre-test scores. Bonferroni post hoc tests were used for pairwise comparisons. Statistical significance was set at $p < .05$.

3. Findings and Results

The final sample consisted of 30 nurses, with 10 participants in each group. Sex and marital status were approximately balanced across groups. In the short-term psychodynamic therapy group, 5 participants were women and 5 were men; 4 were single and 6 were married. In the integrated treatment group, 4 participants were women and 6 were men; 4 were single and 6 were married. In the control group, 6 participants were women and 4 were men; 5 were single and 5 were married. The demographic distribution of participants is presented in Table 1.

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Table 1

Demographic characteristics of participants by group

Variable	Category	Short-term psychodynamic therapy n (%)	Integrated ACT-schema therapy n (%)	Control n (%)
Sex	Female	5 (50%)	4 (40%)	6 (60%)
Sex	Male	5 (50%)	6 (60%)	4 (40%)
Marital status	Single	4 (40%)	4 (40%)	5 (50%)
Marital status	Married	6 (60%)	6 (60%)	5 (50%)

Descriptive statistics showed reductions in headache disability and PSQI scores in both intervention groups from pre-test to post-test and follow-up, while the control group changed only minimally. Because lower PSQI scores indicate better sleep quality, the reduction in PSQI scores should be interpreted as improved sleep quality. The descriptive values for all outcomes and assessment points are presented in Table 2.

Table 2

Mean and standard deviation of outcome variables across assessment points

Outcome	Group	Pre-test M ± SD	Post-test M ± SD	Follow-up M ± SD
Emotional headache disability	Short-term psychodynamic therapy	25.42 ± 5.31	14.68 ± 4.19	15.91 ± 4.70
Emotional headache disability	Integrated ACT-schema therapy	25.81 ± 5.07	12.96 ± 3.85	13.74 ± 4.12
Emotional headache disability	Control	24.96 ± 4.88	23.81 ± 4.62	24.03 ± 4.55
Functional headache disability	Short-term psychodynamic therapy	27.64 ± 4.92	17.35 ± 4.78	18.21 ± 5.03
Functional headache disability	Integrated ACT-schema therapy	27.33 ± 5.14	15.89 ± 4.41	16.52 ± 4.68
Functional headache disability	Control	27.85 ± 4.77	26.92 ± 4.59	27.11 ± 4.82
Sleep quality (PSQI)	Short-term psychodynamic therapy	14.61 ± 2.43	9.46 ± 2.18	9.89 ± 2.35
Sleep quality (PSQI)	Integrated ACT-schema therapy	14.85 ± 2.37	8.11 ± 2.04	8.52 ± 2.26
Sleep quality (PSQI)	Control	14.54 ± 2.29	14.12 ± 2.17	14.31 ± 2.41

The Shapiro-Wilk test indicated that the distributions of the pre-test variables were normal in all three groups. Levene's test indicated equality of variances for the outcomes. Box's M tests were non-significant, supporting homogeneity of variance-covariance matrices. The assumption of homogeneity of regression slopes was also met for the dependent variables. Therefore, multivariate analysis of covariance was considered appropriate.

The multivariate test for sleep quality was significant, Wilks' Lambda = .49, $F(4, 50) = 5.43$, $p = .001$, partial eta squared = .30, indicating an overall group effect after controlling for pre-test scores. As shown in Table 3, univariate ANCOVA showed significant group effects for sleep quality at post-test, $F(2, 26) = 5.93$, $p = .008$, partial eta squared = .31, and at follow-up, $F(2, 26) = 6.13$, $p = .007$, partial eta squared = .32.

Table 3

ANCOVA results for sleep quality

Outcome	Source	df	F	p	Partial eta squared
PSQI post-test	Pre-test	1	0.89	.35	.03
PSQI post-test	Group	2	5.93	.008	.31
PSQI follow-up	Pre-test	1	0.004	.94	.001
PSQI follow-up	Group	2	6.13	.007	.32

Bonferroni comparisons showed that, at post-test, the short-term psychodynamic therapy group differed significantly from the integrated therapy group (MD = -1.92, p = .03) and the control group (MD = -3.07, p = .002). The difference between the integrated therapy group and the control group at post-test was not significant (MD = -1.16, p = .17). At follow-up, the two active interventions did not differ significantly from one another (MD = 1.11, p = .25),

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whereas both differed significantly from the control group: short-term psychodynamic therapy vs. control, MD = -2.17, p = .04; integrated therapy vs. control, MD = -3.28, p = .002.

For headache-related disability, the multivariate group effect was significant, Wilks' Lambda = .30, F(8, 44) = 4.50, p = .001, partial eta squared = .45. As summarized in Table 4, univariate ANCOVA showed significant group effects for emotional headache disability at post-test, F(2, 25) = 20.31, p < .001, partial eta squared = .62, and follow-up, F(2, 25) = 15.16, p < .001, partial eta squared = .55. Significant group effects were also found for functional headache disability at post-test, F(2, 25) = 12.54, p < .001, partial eta squared = .50, and follow-up, F(2, 25) = 14.43, p < .001, partial eta squared = .54.

Table 4

ANCOVA results for headache-related disability

Outcome	Source	df	F	p	Partial eta squared
Emotional disability post-test	Pre-test	1	13.58	.001	.35
Emotional disability post-test	Group	2	20.31	< .001	.62
Functional disability post-test	Pre-test	1	1.34	.25	.05
Functional disability post-test	Group	2	12.54	< .001	.50
Emotional disability follow-up	Pre-test	1	13.45	.001	.35
Emotional disability follow-up	Group	2	15.16	< .001	.55
Functional disability follow-up	Pre-test	1	1.73	.20	.07
Functional disability follow-up	Group	2	14.43	< .001	.54

Bonferroni post hoc results indicated significant pairwise differences among the groups for both emotional and functional disability. As shown in Table 5, at post-test, the short-term psychodynamic group differed from the integrated treatment group for emotional disability (MD = -6.38, p = .002) and functional disability (MD = -5.24, p = .01), and both active groups differed significantly from the control group. At follow-up, the psychodynamic group again differed significantly from the integrated treatment group for emotional disability (MD = -4.37, p = .02) and functional disability (MD = -5.50, p = .01), and both active groups remained significantly different from the control group. The reported adjusted comparisons therefore indicated sustained effects of both interventions, with larger adjusted reductions in headache disability in the psychodynamic condition.

Table 5

Bonferroni pairwise comparisons for headache-related disability

Outcome	Comparison	Mean difference	SE	p
Emotional disability post-test	Psychodynamic vs. Integrated	-6.38	1.79	.002
Emotional disability post-test	Psychodynamic vs. Control	-11.90	1.87	.001
Emotional disability post-test	Integrated vs. Control	-5.51	1.90	.008
Functional disability post-test	Psychodynamic vs. Integrated	-5.24	1.93	.01
Functional disability post-test	Psychodynamic vs. Control	-10.07	2.01	.001
Functional disability post-test	Integrated vs. Control	-4.82	2.04	.03
Emotional disability follow-up	Psychodynamic vs. Integrated	-4.37	1.78	.02
Emotional disability follow-up	Psychodynamic vs. Control	-10.29	1.86	.001
Emotional disability follow-up	Integrated vs. Control	-5.92	1.89	.001
Functional disability follow-up	Psychodynamic vs. Integrated	-5.50	1.96	.01
Functional disability follow-up	Psychodynamic vs. Control	-11.02	2.06	.001
Functional disability follow-up	Integrated vs. Control	-5.52	2.08	.01

4. Discussion

The present study compared short-term psychodynamic therapy with an integrated ACT-schema therapy intervention for improving sleep quality and reducing tension-type headache-related disability in insecurely attached nurses with anxiety symptoms. The results showed significant overall group effects for both outcome domains

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after controlling for baseline scores. Both active interventions were associated with meaningful reductions in symptom scores relative to the wait-list condition, especially for headache-related disability. The findings are clinically important because the participants were drawn from demanding hospital wards where anxiety, poor sleep, and somatic tension may interfere with both personal well-being and professional functioning.

For sleep quality, the multivariate and univariate tests supported a significant group effect at both post-test and follow-up. The PSQI scores decreased in the active intervention groups, indicating better sleep quality, while the control group remained largely unchanged. The adjusted post hoc comparisons indicated a significant advantage of the short-term psychodynamic group over the control group at both post-test and follow-up. The integrated ACT-schema group differed significantly from the control group at follow-up, although the post-test comparison with control did not reach significance in the Bonferroni table. This pattern suggests that the integrated intervention may need more time for sleep-related benefits to consolidate, whereas the psychodynamic intervention may have produced a faster adjusted improvement in this sample.

The sleep findings can be interpreted through the mechanisms of the two interventions. Short-term psychodynamic therapy directly addresses avoided affect, defensive emotional suppression, and unresolved interpersonal conflict. In insecurely attached nurses, occupational stress may activate fears of criticism, rejection, failure, or emotional deprivation. When these emotions are defensively suppressed, they may be expressed through arousal, rumination, muscular tension, and difficulty initiating or maintaining sleep. Psychodynamic work may improve sleep by reducing the internal pressure of unprocessed affect and by helping participants recognize and regulate anxiety linked to caregiving, authority relationships, and professional perfectionism.

The integrated ACT-schema therapy intervention may work through partly different processes. ACT helps participants notice thoughts and emotions without experiential avoidance, while schema therapy helps identify and modify long-standing patterns such as self-sacrifice, unrelenting standards, emotional deprivation, and abandonment sensitivity. In nurses who habitually ignore personal needs to meet professional expectations, this combination may support healthier self-care, values-based action, and more flexible responses to stress. The follow-up effect on sleep quality may reflect the gradual internalization of these skills.

For headache-related disability, the results were clearer and stronger. Significant group effects were observed for both emotional and functional dimensions at post-test and follow-up. Both active interventions differed from the control group, and the adjusted pairwise comparisons showed larger reductions in the psychodynamic group than in the integrated treatment group across both dimensions and time points. These findings suggest that short-term psychodynamic therapy may be especially relevant when headache-related disability is strongly connected with emotional inhibition and unresolved anxiety.

This interpretation is consistent with the conceptual basis of ISTDP, which views some somatic symptoms as linked to the interaction among emotion, anxiety, and defensive avoidance. Although tension-type headache has multifactorial causes and should not be reduced to a single psychological mechanism, emotional suppression and chronic physiological tension can plausibly contribute to headache burden. Evidence from a randomized clinical trial on medically unexplained pain also suggests that ISTDP can be a relevant psychological option for pain-related somatic presentations (18). The present results suggest that an intervention focused on emotional processing may reduce the emotional and functional impact of tension-type headache in anxious nurses with insecure attachment.

At the same time, the effectiveness of the integrated ACT-schema intervention should not be underestimated. This intervention also produced significant improvements in headache disability relative to the control group. Its clinical value may lie in helping participants change their relationship with pain-related thoughts, reduce avoidance, and develop more flexible coping patterns. Schema work may also help nurses recognize why they overextend themselves, avoid help-seeking, or interpret occupational stress through early maladaptive schemas. These processes may be highly relevant for long-term prevention, even if the psychodynamic condition showed stronger adjusted effects during the short follow-up period.

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The findings also have implications for occupational mental health. Nurses in high-acuity wards often normalize fatigue, poor sleep, headaches, and emotional distress. A psychological intervention for this group should therefore be brief, feasible, and sensitive to their work schedules. The eight-session format used in this study suggests that focused psychological programs can be implemented even in busy hospital settings. However, such programs should not be viewed as a substitute for organizational responsibility. Sleep disturbance and headache in nurses may also reflect workload, shift patterns, staffing pressure, moral stress, and lack of recovery time. Psychological interventions may help individuals cope, but healthy work systems remain essential.

This study has several limitations. First, the sample size was small, with only 10 participants in each group. Second, participants were recruited from one hospital, which limits generalizability. Third, the follow-up period was only one month, so the durability of treatment effects beyond the short term is unknown. Fourth, outcomes were measured by self-report questionnaires, which may be influenced by expectations or response bias. Fifth, although participants were randomly assigned to groups after screening, the sampling method was initially convenience-based. Sixth, the local attachment instrument used for screening has limited international traceability, and the related Persian validation source should be supplied to the journal if available. Seventh, the study was not reported as prospectively registered in a clinical trial registry.

Future studies should replicate these findings with larger samples, longer follow-up periods, blinded outcome assessment where feasible, and clearer reporting of randomization and allocation concealment. It would also be valuable to examine whether baseline attachment subtype, headache chronicity, shift-work pattern, or anxiety severity moderates treatment response. Finally, hybrid protocols that begin with emotion-focused psychodynamic work and then add ACT-schema skills for relapse prevention may be worth testing in future randomized trials.

5. Conclusion

This study found that short-term psychodynamic therapy and integrated ACT-schema therapy were associated with improvements in sleep quality and tension-type headache-related disability among insecurely attached nurses with anxiety symptoms. The strongest adjusted effects were observed for headache-related disability, with the psychodynamic condition showing larger reductions than the integrated treatment condition in the reported pairwise comparisons. For sleep quality, both interventions showed improvement over time, with significant follow-up advantages over control. These findings suggest that brief, focused psychological interventions may be clinically useful for nurses whose occupational stress is accompanied by anxiety, poor sleep, and disabling tension-type headache. Larger and methodologically stronger trials are needed before firm clinical recommendations can be made.

Authors' Contributions

Fatemeh Hassanezhad: conceptualization, data collection, intervention coordination, writing-original draft. Fatemeh Shahabizadeh: supervision, methodology, writing-review and editing. Jalil Jarrahi Feriz: statistical analysis and methodological consultation. All authors reviewed and approved the final manuscript.

Declaration

Artificial intelligence tools were used only for language editing and translation support in preparing the English version of the manuscript. The scientific content, data, interpretation of findings, and final responsibility for the manuscript remain with the authors.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

The study was approved by the Ethics Committee of Islamic Azad University, Birjand Branch (IR.IAU.BIRJAND.REC.1403.038). Written informed consent was obtained from all participants. Participation was voluntary, and participants could withdraw at any stage. Data were coded and handled confidentially.

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