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Comparing the Effectiveness of an Integrated ACT and Desensitization Intervention Package With EFT on Situational Anxiety and Psychological Flexibility Among Hospital Employees

Narges. Tabibi Boushehri[1], Marzieh. Kamous[2], Mahshid. Eslamian[3], Zhila. Ahangarzadeh[4], Tahereh. Mokhtari[5*]

1 Department of Training Psychology, Central Tehran, Islamic Azad University, Tehran, Iran
2 Department of clinical psychology, SR.C., Islamic Azad University, Tehran, Iran.
3 Department of Psychology, karaj Branch, Islamic Azad University, karaj, iran
4 Department of Psychology, Shahrood Branch, Islamic Azad University, Shahrood, Iran
5 Department of Psychology, Science And Research (shahr qods) Islamic Azad University, Tehran Branch, Islamic Azad University, Tehran, Iran
*Correspondence: taherehmokhtari51@gmail.com

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ABSTRACT

The present study aimed to develop an Acceptance and Commitment Therapy (ACT) educational package integrated with a desensitization method and to compare its effectiveness with the Emotional Freedom Technique (EFT) in reducing situational anxiety and enhancing psychological flexibility among employees of public hospitals, in order to determine which intervention is more effective in improving cognitive and emotional indicators associated with employee functioning. This study employed a qu asi-experimental design with pretest, posttest, and four-month follow-up assessments and included three groups: an ACT plus desensitization group (n = 12), an Emotional Freedom Technique training group (n = 11), and a control group (n = 14). The statistical population consisted of all employees of public hospitals in Tehran who experienced situational anxiety. The initial study sample comprised 45 participants selected through purposive sampling. The research instruments included the State–Trait Anxiety Inventory for Adults (STAI-AD) and the Cognitive Flexibility Questionnaire (CFQ). Data were analyzed using the Kruskal–Wallis H test, repeated-measures analysis of covariance, and Bonferroni post hoc tests at a significance level of .05 using SPSS version 27. The results indicated that, after controlling for pretest effects, significant between-group differences were found in perceived controllability, problem-solving processing, and situational anxiety (between-subjects effects, $p < .001$). In addition, the time × group interaction effects were significant for perceived controllability and problem-solving processing ($p < .001$). ACT combined with desensitization resulted in a significant increase in perceived controllability at both posttest and follow-up compared with the control group ($p < .001$), although the effect was not maintained from posttest to follow-up ($p = .150$). The EFT intervention produced a significant improvement in perceived controllability relative to the control group only at follow-up ($p < .001$), and the change between posttest and follow-up was significant and maintained ($p = .001$). Regarding problem-solving processing, ACT combined with desensitization produced significant improvements at both posttest and follow-up compared with the control group ($p < .001$); however, this effect was not maintained across the posttest-to-follow-up interval ($p = .191$). EFT did not differ significantly from the control group at either assessment point ($p > .05$). For situational anxiety, only ACT combi ned with desensitization resulted in a significant reduction compared with both the control and EFT groups ($p < .001$), whereas EFT did not differ significantly from the control group ($p = 1.000$). Overall, the findings demonstrated that ACT combined with desensitization was more effective in enhancing perceived controllability and problem-solving processing and in reducing situational anxiety among hospital employees.

Keywords: Acceptance and Commitment Therapy (ACT), Emotional Freedom Technique (EFT), desensitization, situational anxiety, psychological flexibility, hospital employees.

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Introduction

Hospital employees work in environments characterized by sustained psychological demands, rapid decision-making, interpersonal complexity, exposure to illness and suffering, and the necessity of maintaining professional functioning under conditions of uncertainty. These occupational demands can contribute to elevated levels of stress, anxiety, emotional exhaustion, and reduced psychological functioning, particularly when employees perceive that the demands of their work exceed their available coping resources. In health-care settings, psychological distress is not only an individual mental health concern but also an occupational issue that may influence concentration, decision-making, interpersonal communication, job performance, absenteeism, and intention to leave the profession. Accordingly, the mental health of hospital personnel has increasingly been viewed as a central component of workforce sustainability, organizational functioning, and quality of care. Evidence from health-care populations indicates that anxiety and psychological distress can become persistent when occupational stressors are accompanied by limited adaptive coping resources and reduced flexibility in responding to difficult internal experiences (1-3). Recent research has similarly emphasized that employee mental well-being should be regarded as an integral dimension of sustainable occupational functioning rather than as a secondary outcome of workplace performance (4).

Situational anxiety is especially relevant in hospital settings because many occupational stressors are acute, immediate, and context dependent. Situational anxiety refers to a transient emotional state characterized by tension, apprehension, heightened arousal, and concern in response to perceived threat or uncertainty. Unlike relatively stable trait anxiety, situational anxiety fluctuates according to environmental demands and may increase during difficult patient interactions, emergencies, workload surges, critical incidents, interpersonal conflicts, or high-responsibility clinical and administrative tasks. The State–Trait Anxiety Inventory has been widely used to assess such state-dependent anxiety responses and has demonstrated utility in both clinical and occupationally relevant populations (5-7). In hospital personnel, repeated activation of situational anxiety may interfere with attentional control, increase cognitive rigidity, amplify threat perception, and lead employees to rely more heavily on avoidance, reassurance seeking, or habitual coping strategies. Studies among nurses and other health-care workers have shown that anxiety frequently co-occurs with work-related stress, burnout, and broader psychological difficulties, making it an important target for preventive and therapeutic interventions (2, 8, 9).

The ability to adapt cognitively and behaviorally to changing circumstances is one of the psychological resources most relevant to coping with situational anxiety. Cognitive flexibility refers to the capacity to recognize alternative interpretations and behavioral options, shift perspectives when circumstances change, and perceive challenging situations as manageable rather than entirely uncontrollable. Dennis and Vander Wal conceptualized cognitive flexibility in terms of components that include perceived controllability and the ability to generate alternative explanations and solutions when confronted with difficult situations (10). Perceived controllability is particularly important because employees who believe that stressful situations can be influenced or managed may respond more adaptively than individuals who experience similar circumstances as fixed, overwhelming, or beyond control. Problem-solving processing also allows individuals to broaden the range of responses available under pressure rather than remaining confined to automatic or threat-driven patterns. Evidence suggests that cognitive flexibility is associated with more

adaptive social and psychological functioning and may provide a protective resource in stressful contexts (11).

Psychological flexibility is a broader but closely related construct that has received considerable attention in contemporary models of mental health. It refers to the ability to remain open to unwanted thoughts and feelings, maintain awareness of the present situation, and modify or persist in behavior in accordance with personally meaningful values. Psychological flexibility therefore involves not simply changing the content of cognition but altering the way individuals relate to internal experiences. Within hospital work, this capacity may be especially important because employees cannot eliminate all difficult emotions, uncertainty, or occupational stressors. Instead, they must often function effectively while anxiety, fatigue, worry, or distress is present. Research among hospital and intensive care personnel has shown that higher psychological flexibility is associated with lower distress and more favorable occupational outcomes, including stronger work engagement and improved adaptation under demanding conditions (12, 13). Conversely, psychological inflexibility has been associated with more severe psychological symptoms and maladaptive patterns of responding, including difficulties among shift-working nurses (14). Psychological flexibility has also been identified as a relevant mechanism in understanding occupational stress, burnout, and turnover-related outcomes among health-care workers and employees in other high-demand service sectors (8, 15).

These findings are consistent with transdiagnostic perspectives suggesting that anxiety may be maintained partly by rigid responses to internal and external uncertainty. Psychological inflexibility can promote attempts to suppress, control, escape, or avoid distressing thoughts and emotions, even when such responses become counterproductive over time. Such patterns are particularly relevant to anxiety because immediate avoidance can reduce distress temporarily while reinforcing the perception that anxiety-related experiences are dangerous and must be eliminated. Contemporary research has therefore increasingly examined psychological flexibility, intolerance of uncertainty, and related processes as transdiagnostic mechanisms involved in anxiety and emotional distress (16). In occupational settings, greater flexibility may allow employees to remain behaviorally effective even when the work environment cannot be immediately changed. This may explain why flexibility-related processes have been associated with reduced distress and better functioning across hospital and nonhospital employee populations (13, 17).

Acceptance and Commitment Therapy is one of the principal therapeutic approaches explicitly designed to increase psychological flexibility. ACT emerged from contextual behavioral science and conceptualizes psychological suffering as being maintained in part by experiential avoidance, cognitive fusion, restricted attention to the present moment, attachment to a conceptualized self, disconnection from personal values, and patterns of behavioral inaction or avoidance. Rather than attempting primarily to reduce or eliminate unwanted thoughts and emotions, ACT seeks to change the individual's relationship with these experiences and promote behavior that is consistent with personally meaningful values (18). Its six interrelated processes—acceptance, cognitive defusion, contact with the present moment, self-as-context, values clarification, and committed action—form an integrated model of behavioral change directed toward psychological flexibility (19). Within this framework, anxiety does not necessarily need to disappear before adaptive behavior can occur; instead, individuals learn to make room for anxious experiences while continuing to engage in meaningful and effective action.

ACT has accumulated empirical support for anxiety and depressive conditions and has increasingly been adapted to workplace settings (20). In health-care workers, workplace ACT interventions have demonstrated potential to reduce psychological distress and improve adaptive psychological functioning (21). Experimental research among health-care workers at a state hospital has likewise indicated that ACT training can enhance psychological flexibility and stress-coping skills (22). These findings are particularly relevant to hospital personnel because ACT targets processes that may directly influence both emotional regulation and occupational functioning. By reducing fusion with anxiety-related thoughts, increasing willingness to experience discomfort, and reconnecting behavior with personally meaningful professional values, ACT may enable employees to respond more adaptively to stressful situations without becoming dominated by avoidance or internal struggle. Similar mechanisms have been observed in emotionally demanding service work, where ACT-based interventions have been associated with increased psychological flexibility and shifts in emotion-regulation strategies (17).

Despite these advantages, ACT may be further strengthened when combined with procedures that directly address conditioned anxiety responses to specific situations. Desensitization and graded exposure approaches are based on the principle that repeated and controlled contact with anxiety-provoking stimuli can reduce avoidance and weaken maladaptive associations between particular situations and fear responses. When integrated with ACT, desensitization can be framed not simply as an attempt to eliminate anxiety but as an opportunity to practice willingness, present-moment awareness, and value-consistent action in the presence of discomfort. This integration may be particularly useful for hospital employees whose anxiety is activated by identifiable workplace situations. Gradual exposure can provide structured opportunities for corrective learning, while ACT processes may reduce the tendency to evaluate treatment success solely in terms of immediate symptom reduction. Contemporary psychotherapy research also supports the value of experiential and behaviorally active procedures in adult treatment, including role-based and exposure-oriented strategies that promote emotional and behavioral learning (23).

Emotion-regulation interventions represent another potentially useful approach for employees experiencing anxiety. Emotional Freedom Technique is a structured intervention that combines cognitive or emotional focus on a distressing issue with repetitive tapping on specified bodily points. EFT protocols commonly involve identifying an emotionally salient problem, rating subjective distress, using a setup statement, applying a standardized tapping sequence, and reassessing emotional intensity. Craig and colleagues were among the authors who contributed to the development and clinical application of EFT protocols in psychologically distressed populations (24). Although the theoretical mechanisms proposed for EFT remain distinct from those of ACT, its practical aim is frequently to reduce emotional arousal and facilitate regulation of distressing thoughts, memories, or bodily sensations. This makes EFT relevant to situational anxiety, where acute physiological and emotional activation may interfere with adaptive responding.

Research on EFT and related emotion-focused interventions has reported beneficial effects across several emotional and psychological outcomes. In individuals with trait-state anxiety, EFT has been associated with improvements in negative mood and alexithymia-related difficulties (25). Other work comparing emotion-focused interventions with cognitive-analytic approaches has demonstrated that emotionally oriented treatments can influence anxiety sensitivity, experiential avoidance, cognitive emotion regulation, and

maladaptive pain-related cognitions (26). More broadly, emotion-focused models emphasize the importance of identifying, accessing, processing, and transforming maladaptive emotional responses rather than relying exclusively on cognitive restructuring (27). Contemporary integrative perspectives have also continued to explore the contribution of emotion-focused treatment processes to psychological well-being across different populations and stages of life (28). These findings support further investigation of emotion-focused and somatically oriented procedures as interventions for employees who encounter repeated emotional strain.

However, ACT and EFT may operate through meaningfully different therapeutic pathways. ACT is primarily oriented toward psychological flexibility, willingness, cognitive defusion, values, and behavior change, whereas EFT places greater emphasis on directly reducing distress associated with specific thoughts, emotions, bodily sensations, and memories. ACT may therefore be particularly well suited to enhancing cognitive and behavioral adaptability, while EFT may be more immediately focused on regulating emotional arousal. This distinction is important because situational anxiety among hospital employees includes both cognitive and emotional components. An employee may experience heightened physiological arousal while simultaneously perceiving limited control, generating few alternative solutions, or becoming cognitively fused with catastrophic predictions. A comprehensive occupational intervention may therefore need to address both the immediate intensity of anxiety and the broader flexibility required to respond effectively under changing conditions.

Research in workplace psychology further indicates that interventions should be evaluated not only according to symptom reduction but also in terms of functional psychological resources. Health-care employees operate within complex systems in which situational demands cannot always be reduced. Consequently, strengthening flexibility, adaptive problem solving, emotional tolerance, and perceived control may be more sustainable than focusing exclusively on the removal of distress. Findings concerning expressive flexibility, contextual sensitivity, and occupational adjustment among health-care workers support this broader emphasis on adaptive regulation (3). Likewise, evidence connecting situational awareness, resilience, and occupational stress among nurses underscores the need to strengthen employees' capacity to respond adaptively to rapidly changing clinical environments (9). Even outside health care, emerging research on emotion-regulation strategies for desk-based workers demonstrates increasing attention to practical methods for reducing anxiety and improving self-regulation during work activities (29).

The occupational relevance of psychological flexibility is further supported by findings that reduced flexibility can magnify the effect of workplace stressors on psychological distress and withdrawal-related outcomes (15). Among nurses, psychological inflexibility has also been linked to sleep-related dysfunctional beliefs and insomnia through complex psychological pathways, suggesting that inflexibility may contribute to multiple aspects of impaired functioning rather than to anxiety alone (14). In contrast, psychological flexibility has been associated with better adaptation in demanding health-care environments and may buffer against burnout-related processes (8). These findings provide a rationale for interventions that directly target flexibility-related mechanisms, particularly when employees are exposed to recurrent stressors that cannot be fully removed from the work environment.

At the same time, current evidence does not establish that a single intervention approach is uniformly superior for all psychological outcomes among hospital personnel. Systematic reviews of mental health interventions for health-care workers indicate considerable variation in treatment models, delivery formats,

targeted outcomes, and effect sizes, emphasizing the need for more comparative and context-specific research (1). ACT has promising support in workplace and health-care settings, but additional evidence is needed regarding whether integrating ACT with desensitization can strengthen its effect on situational anxiety and cognitive flexibility-related outcomes (21, 22). Similarly, although EFT has demonstrated beneficial effects on anxiety-related and emotional outcomes, there remains limited direct evidence comparing it with a psychological-flexibility-oriented intervention among public hospital employees (25). Direct comparison is particularly important because two interventions may both reduce distress while differing substantially in their effects on perceived controllability, problem-solving processing, and maintenance of therapeutic change.

Another important issue concerns the persistence of intervention effects over time. Immediate post-intervention improvements do not necessarily indicate that therapeutic gains will be maintained after structured sessions have ended. For employees who remain exposed to the same occupational stressors after treatment, follow-up assessment is essential for determining whether newly acquired psychological skills generalize to daily work and remain effective under naturalistic conditions. This is particularly relevant for interventions such as ACT, which emphasizes continued values-based practice and willingness, and EFT, which may be practiced independently as a self-regulation strategy. Evaluating both posttest and follow-up outcomes can therefore distinguish immediate intervention responses from delayed, maintained, or diminishing effects.

Taken together, the literature indicates that situational anxiety and limited cognitive or psychological flexibility are important concerns in hospital employees and that both ACT-based and emotion-focused interventions offer plausible pathways for addressing these difficulties. ACT provides a theoretically coherent model for increasing psychological flexibility and promoting adaptive behavior in the presence of distress (18-20), while EFT offers a structured strategy for engaging with and reducing the emotional intensity associated with anxiety-provoking experiences (24, 25). The integration of ACT with desensitization may additionally combine acceptance-based processes with systematic engagement with anxiety-provoking situations, potentially producing broader effects on perceived controllability, problem-solving processing, and situational anxiety than an emotion-regulation technique alone.

Therefore, the aim of the present study was to develop an integrated ACT and desensitization intervention and compare its effectiveness with Emotional Freedom Technique in reducing situational anxiety and improving perceived controllability and problem-solving processing as dimensions of cognitive flexibility among employees of public hospitals.

Methods and Materials

Study Design and Participants

The present study employed a quasi-experimental pretest–posttest design with a four-month follow-up and three parallel groups, including two experimental groups and one control group. The first experimental group received Acceptance and Commitment Therapy (ACT) integrated with a desensitization method, the second experimental group received Emotional Freedom Technique (EFT) training, and the control group received no intervention during the main study period. The statistical population consisted of employees of public hospitals in Tehran, Iran, who experienced situational anxiety and were employed at the participating

hospitals between July and December 2024. Eligibility with respect to situational anxiety was initially confirmed by psychological counselors. A total of 45 eligible participants were selected using purposive sampling and were subsequently allocated to the three study groups, with 15 participants initially assigned to each group. Random allocation was implemented through a simple participant-based drawing procedure in which eligible participants drew numbered slips from an envelope corresponding to the study groups. The adequacy of the required sample size was examined using G*Power software based on a repeated-measures analysis of variance with a within–between interaction, assuming an alpha level of .05, an effect size of .25, and statistical power of .90 (Kang, 2021).

The inclusion criteria were the presence of situational anxiety, a minimum age of 20 years, adequate physical health to attend the intervention sessions in person, no participation in psychotherapy sessions during the preceding 6 months, no concurrent enrollment in another alternative psychological or educational intervention program, formal or contractual employment at one of the participating public hospitals, possession of sufficient literacy to understand the intervention materials and complete the study questionnaires, no use of anxiolytic medication for at least 1 month before enrollment, and full willingness to participate in the ACT or EFT training sessions. The exclusion criteria comprised absence from more than two intervention sessions, the development or presence of physical or cognitive limitations that prevented effective participation in the intervention sessions, severe psychiatric disorders such as schizophrenia, bipolar I disorder, or severe depressive disorder accompanied by suicide risk, receipt of another psychological or psychotherapeutic intervention during the study period, and unwillingness to continue participation or withdrawal from the study at any stage.

Following receipt of the required institutional and university approvals, the researchers approached three public hospitals in Tehran. The hospitals were selected through convenience sampling based on accessibility and willingness to cooperate with the research project. After coordination with the management of each hospital, study announcements describing the research and the opportunity to participate were distributed within the hospitals. The announcements were also disseminated through the hospitals' virtual communication channels and social media networks. Hospital employees who expressed interest in participation and submitted their information in response to the announcements were initially screened by the researchers. From among the interested employees, 60 individuals were invited to an initial face-to-face screening interview conducted at the participating hospitals. During these interviews, the objectives of the research, the intervention procedures, the voluntary nature of participation, and the relevant ethical principles were explained, and participants were given an opportunity to ask questions regarding the study and interventions. Screening questions were then administered to determine whether each candidate met the predefined inclusion and exclusion criteria.

Participants were additionally provided with written information concerning the requirements and procedures of the intervention sessions. Individuals who did not fulfill the eligibility requirements, including those who were unable to allocate sufficient time to attend the scheduled intervention sessions, were excluded before enrollment. Following completion of the screening process, 45 eligible employees were selected for participation. Written informed consent was obtained from all participants using a research participation consent form. The study instruments were subsequently administered as the pretest, after which the 45 participants were randomly allocated to the two experimental groups and the control group.

The EFT group received 10 sessions lasting approximately 60 minutes each, conducted twice weekly in accordance with the general therapeutic principles described by Craig et al. (2009). The ACT plus desensitization group received eight 60-minute sessions conducted twice weekly, drawing on the ACT framework proposed by Eifert and Forsyth (2005) and incorporating systematic desensitization and graded exposure procedures. The control group did not receive psychological training during the main intervention period. All intervention sessions were delivered face-to-face in an appropriate training room under the supervision of one of the participating hospitals. For ethical reasons, after completion of the study, members of the control group were provided with access to an intensive online educational program covering the principal intervention materials. Participants in the two experimental groups completed the study questionnaires again immediately following the final intervention session as the posttest assessment. Four months after completion of the interventions, the measures were administered for a third time as the follow-up assessment. Follow-up communication was maintained through virtual groups established by the researchers, and the four-month follow-up questionnaires were completed online.

Data Collection Tools

State–Trait Anxiety Inventory for Adults (STAI-AD). Situational anxiety was assessed using the state anxiety scale of the State–Trait Anxiety Inventory for Adults developed by Spielberger (1983). The instrument was designed to measure an individual's current level of anxiety, particularly the transient emotional condition characterized by subjective feelings of tension, apprehension, nervousness, and heightened autonomic arousal. The state anxiety scale consists of 20 items, each rated on a 4-point Likert-type scale ranging from 1 (very little) to 4 (very much) (Rastegari et al., 2023). Item scores are summed to obtain a total situational anxiety score ranging from 20 to 80, with higher scores indicating greater levels of situational anxiety. The original instrument demonstrated satisfactory psychometric properties, including acceptable evidence of reliability and validity (Spielberger, 1983). Previous studies have also reported adequate test–retest reliability for the scale, with a coefficient of approximately .84 (Kalani et al., 2019; Torabi Zonouz et al., 2020). In the present study, the internal consistency of the situational anxiety scale was satisfactory, with a Cronbach's alpha coefficient of .87.

Cognitive Flexibility Questionnaire (CFQ). Cognitive flexibility was assessed using the Cognitive Flexibility Questionnaire developed by Dennis and Vander Wal (2010). This brief 19-item self-report instrument assesses an individual's perceived ability to respond flexibly to difficult or stressful situations by recognizing alternative explanations, identifying alternative behavioral responses, and perceiving challenging circumstances as potentially controllable. Items are rated on a 5-point Likert-type scale (Dennis & Vander Wal, 2010). The instrument includes two principal dimensions: perceived controllability and problem-solving processing. The perceived controllability dimension comprises Items 1, 3, 5, 6, 8, 10, 12, 13, 14, 15, 16, 18, and 19, whereas the problem-solving processing dimension comprises Items 2, 4, 7, 9, 11, and 17. The questionnaire has been used to assess changes in flexible thinking in cognitive-behavioral interventions for depression and other psychological conditions. Previous research has demonstrated satisfactory internal consistency, with a Cronbach's alpha coefficient of .90 reported for the overall instrument (Kazemi et al., 2023). In the present study, the Cronbach's alpha coefficient for the questionnaire was .74, indicating acceptable internal consistency for the study sample.

Interventions

Emotional Freedom Technique Intervention. The EFT intervention consisted of 10 structured 60-minute sessions conducted twice weekly and was developed on the basis of the procedures described by Craig et al. (2009), with additional adaptation from relevant intervention applications reported by Ghorbani and Solimanifar (2022) and Shokrolahi et al. (2022). The first session focused on introducing EFT, explaining its proposed applications for anxiety management and emotion regulation among hospital employees, identifying the principal tapping points according to the Craig protocol, and practicing the technique in relation to a participant's current emotion, bodily sensation, or distressing thought. Participants were also taught to differentiate thoughts, emotions, and bodily sensations and were instructed to practice EFT daily in response to immediate emotional experiences. The second session addressed negative automatic thoughts and distressing mental images by explaining the role of automatic cognitions in anxiety, applying EFT to negative thoughts, unpleasant images, and anxiety-provoking memories, and practicing the differentiation between cognition and emotional experience. Participants were encouraged to use EFT during real-life stressful situations between sessions. The third session concentrated on identifying and modifying cognitive distortions associated with anxiety, including catastrophizing and mind reading, and participants applied EFT to maladaptive cognitions and anxiety-provoking situations discussed during the session while monitoring changes in subjective distress. The fourth session targeted emotional states that could precipitate maladaptive behavior, including anger, shame, fear, and helplessness, while also identifying blocking beliefs that interfered with adaptive emotional responding; participants were instructed to apply EFT before anticipated problematic behavior or situational anxiety episodes.

The fifth EFT session focused on consolidating previously acquired skills and addressing deeper layers of anxiety. Homework experiences and changes in subjective units of distress were reviewed, core issues underlying situational anxiety were identified, and EFT was applied to situations associated with persistent anxiety. A brain-balancing procedure was also introduced as a means of identifying perceived resistance to therapeutic change. The sixth session addressed dysfunctional beliefs contributing to anxiety, particularly beliefs such as “I cannot cope,” “I am not good enough,” and “I will fail,” and participants were instructed to monitor and record daily changes in subjective distress within a recurring anxiety-provoking situation. The seventh session emphasized the strengthening of adaptive beliefs and psychological competence through positive-choice EFT procedures, including the use of affirming statements related to capability, safety, and personal worth, with the broader aim of supporting self-efficacy and perceived interpersonal acceptance. The eighth session introduced the Movie Technique for processing earlier anxiety-related memories by gradually recalling specific episodes while applying tapping until the emotional intensity associated with the memory was substantially reduced. The ninth session extended this work through the Tell the Story Technique, with particular attention to core limiting beliefs, emotionally significant memories, and residual emotional aspects that remained associated with prior experiences. The final session integrated and consolidated the material covered across the intervention, reviewed individual therapeutic changes, established a plan for continued EFT practice over subsequent months, and emphasized the use of EFT as a continuing self-help strategy. Participants were encouraged to continue practicing EFT weekly as part of their psychological self-care.

Acceptance and Commitment Therapy Combined With Desensitization. The integrated ACT and desensitization intervention consisted of eight 60-minute sessions delivered twice weekly. The ACT component was informed by established ACT principles and processes described by Eifert and Forsyth (2005), Hayes et al. (2012), and Twohig and Levin (2017), while graded desensitization and exposure procedures were integrated to facilitate progressive confrontation with anxiety-provoking situations. The first session focused on introductions, the development of a therapeutic alliance, enhancement of motivation for participation, clarification of the treatment structure and group expectations, and administration of the pretest measures of situational anxiety and cognitive flexibility. Participants were introduced to the experiential avoidance cycle and its role in the maintenance of anxiety, and an overview of the six core ACT processes was provided. As homework, participants recorded situations that elicited anxiety as well as their corresponding avoidance responses. The second session addressed workplace experiences of situational anxiety and introduced the concept of creative hopelessness, whereby participants examined the long-term ineffectiveness of excessive attempts to control or avoid unwanted internal experiences. Core ACT concepts, particularly acceptance, cognitive defusion, and contact with the present moment, were introduced, and participants practiced experiencing emotions without avoidance. Homework involved identifying and recording avoidant behaviors in real-world situations. The third session emphasized cognitive defusion and basic mindfulness. Participants practiced labeling and observing thoughts without becoming entangled with them and learned mindful breathing and basic present-focused awareness exercises designed to reduce fusion with anxiety-related cognitions. Daily cognitive defusion practice in response to anxiety-provoking thoughts was assigned between sessions.

The fourth ACT session further developed cognitive defusion using exercises such as repeated-word practice and observing thoughts as leaves passing on a stream. Participants learned to establish psychological distance from anxiety-related cognitions while increasing acceptance of immediate emotional experience. At this stage, very low-intensity imaginal desensitization was initiated, and participants practiced 5- to 10-minute imaginal exposure to mildly anxiety-provoking situations as homework. The fifth session emphasized acceptance, willingness, and sustained contact with the present moment. Mindfulness practices were used to facilitate nonavoidant engagement with ongoing experience, and the desensitization component progressed to moderate levels within each participant's anxiety hierarchy. Resistance and avoidance occurring during exposure were explored through an ACT framework, and controlled in vivo exposure to selected real-life situations was assigned as homework. The sixth session introduced self-as-context, or the observing self, and participants practiced noticing thoughts and emotions without judgment or overidentification. This ACT process was explicitly linked with graded exposure and desensitization so that participants could remain in contact with anxiety-provoking experiences while maintaining a broader perspective on internal events. Participants recorded experiences of observing thoughts and emotions during anxiety-provoking situations between sessions. The seventh session focused on values and movement toward a values-oriented life. Participants distinguished values from specific goals, identified personally meaningful values related to their work in hospital settings, and practiced values clarification exercises. Values were then linked to willingness to confront anxiety-provoking situations, and each participant selected a small value-consistent behavior to perform despite the presence of anxiety. The eighth and final session focused on committed action, integration, and treatment termination. Participants developed practical action plans

aligned with their identified values, reviewed the ACT strategies learned during previous sessions, revisited their graded desensitization hierarchy, and evaluated progress in confronting anxiety-provoking circumstances. The principal intervention strategies were consolidated, the posttest measures of situational anxiety and cognitive flexibility were administered, and participants were provided with an individualized plan for continued practice after completion of the intervention.

Data Analysis

Data analysis was performed using IBM SPSS Statistics version 27. Descriptive statistics, including means and standard deviations, were calculated to summarize the study variables across the three measurement occasions and study groups. Before inferential analyses were conducted, the distributional assumptions of the data were examined. The Shapiro–Wilk test was used to assess normality, and Levene's test was applied to evaluate the homogeneity of variances across groups. Because the study included three groups assessed repeatedly at pretest, posttest, and four-month follow-up, repeated-measures analysis of covariance was used to evaluate changes over time, between-group effects, and time × group interaction effects while accounting for baseline differences where appropriate. The Kruskal–Wallis H test was additionally employed for comparisons in which the assumptions required for parametric procedures were not adequately satisfied. When statistically significant omnibus differences were identified, Bonferroni-adjusted post hoc comparisons were conducted to determine the specific pairwise differences between the ACT plus desensitization, EFT, and control groups and, where relevant, between measurement occasions. Statistical significance was established at $p < .05$ for all analyses.

Findings and Results

A total of 37 participants completed the study assessments and were included in the final analyses, comprising 12 participants in the ACT with desensitization group, 11 in the EFT group, and 14 in the control group. Regarding gender, 25 participants (67.6%) were male and 12 (32.4%) were female. In the ACT with desensitization group, 66.7% were male and 33.3% were female; in the EFT group, 63.6% were male and 36.4% were female; and in the control group, 71.4% were male and 28.6% were female. Regarding marital status, 20 participants (54.1%) were single and 17 (45.9%) were married. Formal employees accounted for 32.4% of the total sample, whereas 67.6% were contractual employees. With respect to work experience, 20 participants (54.1%) had 1–3 years of experience, 12 (32.4%) had 3–5 years, and 5 (13.5%) had more than 5 years of work experience. The Kruskal–Wallis H test indicated no statistically significant between-group differences in gender, $H = 0.172$, $p = .917$; marital status, $H = 0.131$, $p = .937$; employment type, $H = 0.201$, $p = .904$; or work experience, $H = 1.567$, $p = .457$. Therefore, the three groups were comparable with respect to the assessed demographic characteristics at baseline.

Table 1. Descriptive Statistics for the Study Variables Across Groups and Measurement Occasions

Variable	Time	Group	n	Mean	SD	Min	Max	Skewness	Kurtosis	Shapiro–Wilk	p
Perceived Controllability	Pretest	ACT with Desensitization	12	31.833	2.480	29	35	0.185	-1.776	0.860	.049
		EFT	11	31.636	2.111	29	35	0.275	-1.347	0.926	.369
		Control	14	32.000	2.000	29	35	-0.067	-0.965	0.939	.402

	Posttest	ACT with Desensitization	12	36.167	1.193	34	38	0.007	-0.203	0.929	.372
		EFT	11	34.455	1.864	31	37	-1.159	0.897	0.792	.007
		Control	14	32.571	2.533	29	35	-0.561	-1.668	0.784	.003
	Follow-up	ACT with Desensitization	12	37.167	1.267	34	38	-1.656	2.542	0.724	.001
		EFT	11	36.182	1.250	34	38	-0.037	-0.468	0.938	.498
		Control	14	32.429	2.593	29	35	-0.430	-1.784	0.786	.003
Problem-Solving Processing	Pretest	ACT with Desensitization	12	15.917	1.564	14	18	0.163	-1.407	0.881	.089
		EFT	11	15.818	1.401	14	18	0.390	-0.816	0.912	.256
		Control	14	15.857	1.292	14	18	0.305	-0.703	0.923	.243
	Posttest	ACT with Desensitization	12	19.333	1.371	17	21	-0.217	-1.226	0.908	.200
		EFT	11	18.000	1.095	16	20	0.000	0.417	0.938	.498
		Control	14	16.714	1.267	14	18	-0.698	-0.150	0.874	.048
	Follow-up	ACT with Desensitization	12	20.667	1.875	17	23	-0.710	-0.145	0.921	.298
		EFT	11	16.909	1.044	15	18	-0.431	-0.932	0.871	.079
		Control	14	16.143	1.460	14	18	0.060	-1.272	0.886	.070
Situational Anxiety	Pretest	ACT with Desensitization	12	41.250	1.215	39	43	-0.205	-0.406	0.940	.495
		EFT	11	41.182	1.401	39	43	-0.390	-0.816	0.912	.256
		Control	14	41.143	1.167	39	43	0.021	-0.439	0.936	.370
	Posttest	ACT with Desensitization	12	38.583	1.505	37	42	1.056	0.994	0.883	.095
		EFT	11	41.000	1.414	39	43	-0.519	-1.050	0.851	.044
		Control	14	41.000	1.301	39	43	0.000	-0.850	0.932	.326
	Follow-up	ACT with Desensitization	12	37.250	1.138	36	40	1.193	2.115	0.851	.038
		EFT	11	41.000	1.414	39	43	-0.519	-1.050	0.851	.044
		Control	14	40.857	1.406	39	43	0.099	-1.195	0.914	.177

As shown in Table 1, the pretest means for perceived controllability were highly similar across the ACT with desensitization, EFT, and control groups, with mean scores of 31.833, 31.636, and 32.000, respectively. At posttest, perceived controllability increased to 36.167 in the ACT with desensitization group and 34.455 in the EFT group, whereas the control group showed only a small change to 32.571. At follow-up, the ACT with desensitization group maintained a high mean score of 37.167, while the EFT group increased further to 36.182 and the control group remained relatively unchanged at 32.429. A similar pattern was observed for problem-solving processing. Pretest means were nearly identical across the ACT with desensitization, EFT, and control groups at 15.917, 15.818, and 15.857, respectively. At posttest, the ACT with desensitization group increased to 19.333 and the EFT group to 18.000, compared with 16.714 in the control group. At follow-up, the ACT with desensitization group increased further to 20.667, whereas the EFT group declined to 16.909 and the control group remained comparatively stable at 16.143. For situational anxiety, the three groups likewise had highly similar baseline means, ranging from 41.143 to 41.250. At posttest, however, situational anxiety declined to 38.583 in the ACT with desensitization group, while the EFT and control groups both had mean scores of 41.000. At follow-up, anxiety in the ACT with desensitization group decreased further to 37.250, whereas mean scores remained approximately unchanged in the EFT and control groups at 41.000 and 40.857, respectively. Overall, the descriptive findings suggested the most pronounced improvements in the ACT with desensitization group, particularly in problem-solving processing and situational anxiety.

Prior to the principal inferential analyses, the assumptions underlying the statistical procedures were evaluated. The Shapiro–Wilk results presented in Table 1 indicated that several distributions did not significantly deviate from normality, although significant departures from normality were observed for some group-by-time combinations, particularly perceived controllability and situational anxiety. Levene's test was also used to assess homogeneity of variance at posttest and follow-up. For problem-solving processing, the assumption of homogeneity of variance was satisfied at both posttest, $F(2, 34) = 1.272$, $p = .293$, and follow-up, $F(2, 34) = 1.110$, $p = .341$. The assumption was also satisfied for situational anxiety at posttest, $F(2, 34) = 0.342$, $p = .713$, and follow-up, $F(2, 34) = 0.659$, $p = .524$. In contrast, Levene's test was significant for perceived controllability at both posttest, $F(2, 34) = 5.113$, $p = .011$, and follow-up, $F(2, 34) = 13.565$, $p < .001$, indicating heterogeneity of variances for this outcome. Accordingly, the researchers additionally examined the relevant comparisons using Welch's robust procedure, and the substantive conclusions were confirmed. Given the relatively small sample size and the evidence of non-normality for several cells, nonparametric procedures were also used where appropriate to support the robustness of the findings.

Table 2. Repeated-Measures Analysis of Covariance for the Study Variables

Variable	Effect Type	Source	SS	MS	F	p	Partial η^2
Perceived Controllability	Within-subjects	Time	0.829	0.829	1.032	.317	.030
		Time × Pretest	0.445	0.445	0.554	.462	.017
		Time × Group	10.827	5.414	6.741	.004	.290
	Between-subjects	Pretest	1.785	1.785	0.261	.613	.008
		Group	238.145	119.073	17.400	< .001	.513
Problem-Solving Processing	Within-subjects	Time	3.050	3.050	2.030	.164	.058
		Time × Pretest	2.932	2.932	1.952	.172	.056
		Time × Group	18.844	9.422	6.272	.005	.275
	Between-subjects	Pretest	0.525	0.525	0.223	.640	.007
		Group	171.160	85.580	36.306	< .001	.688
Situational Anxiety	Within-subjects	Time	0.946	0.946	0.662	.422	.020
		Time × Pretest	1.071	1.071	0.750	.393	.022
		Time × Group	6.250	3.125	2.188	.128	.117
	Between-subjects	Pretest	0.565	0.565	0.239	.628	.007
		Group	150.715	75.357	31.831	< .001	.659

As presented in Table 2, after controlling for pretest scores, the between-subjects group effect was statistically significant for all three outcomes. A significant group effect was found for perceived controllability, $F = 17.400$, $p < .001$, partial $\eta^2 = .513$, indicating that approximately 51.3% of the adjusted between-subject variance was associated with group membership. The group effect was also significant for problem-solving processing, $F = 36.306$, $p < .001$, partial $\eta^2 = .688$, representing the largest between-group effect among the three outcomes. Similarly, a significant group effect was observed for situational anxiety, $F = 31.831$, $p < .001$, partial $\eta^2 = .659$. The pretest covariate itself was not statistically significant for perceived controllability, $p = .613$; problem-solving processing, $p = .640$; or situational anxiety, $p = .628$. Regarding within-subject effects, the main effect of time was not significant for perceived controllability, $p = .317$, problem-solving processing, $p = .164$, or situational anxiety, $p = .422$. However, the time × group interaction was statistically significant for perceived controllability, $F = 6.741$, $p = .004$, partial $\eta^2 = .290$, and problem-solving processing, $F = 6.272$, $p = .005$, partial $\eta^2 = .275$, demonstrating that changes from posttest to follow-up differed according to intervention group for these outcomes. In contrast, the time × group interaction was not significant for situational anxiety, $F = 2.188$, $p = .128$, partial $\eta^2 = .117$. Bonferroni-

adjusted post hoc comparisons were subsequently conducted to identify the specific group and time differences underlying the significant effects.

Table 3. Bonferroni-Adjusted Post Hoc Comparisons for Group × Time Effects and Group Effects

Variable	Comparison	Mean Difference	SE	t	Adjusted p
Perceived Controllability	ACT Posttest vs. EFT Posttest	1.690	0.835	2.025	.766
	ACT Posttest vs. Control Posttest	3.614	0.787	4.594	< .001
	ACT Posttest vs. ACT Follow-up	-1.000	0.366	-2.732	.150
	ACT Posttest vs. EFT Follow-up	-0.022	0.816	-0.027	1.000
	ACT Posttest vs. Control Follow-up	3.745	0.771	4.857	< .001
	EFT Posttest vs. Control Posttest	1.923	0.807	2.383	.347
	EFT Posttest vs. ACT Follow-up	-2.690	0.818	-3.290	.036
	EFT Posttest vs. EFT Follow-up	-1.712	0.383	-4.475	.001
	EFT Posttest vs. Control Follow-up	2.054	0.792	2.595	.210
	Control Posttest vs. ACT Follow-up	-4.613	0.768	-6.005	< .001
	Control Posttest vs. EFT Follow-up	-3.636	0.787	-4.617	< .001
	Control Posttest vs. Control Follow-up	0.131	0.339	0.386	1.000
	ACT Follow-up vs. EFT Follow-up	0.978	0.798	1.225	1.000
	ACT Follow-up vs. Control Follow-up	4.744	0.752	6.307	< .001
	EFT Follow-up vs. Control Follow-up	3.767	0.772	4.880	< .001
Problem-Solving Processing	ACT Posttest vs. EFT Posttest	1.354	0.517	2.619	.198
	ACT Posttest vs. Control Posttest	2.631	0.487	5.403	< .001
	ACT Posttest vs. ACT Follow-up	-1.318	0.500	-2.634	.191
	ACT Posttest vs. EFT Follow-up	2.431	0.583	4.173	.003
	ACT Posttest vs. Control Follow-up	3.201	0.542	5.903	< .001
	EFT Posttest vs. Control Posttest	1.278	0.499	2.562	.228
	EFT Posttest vs. ACT Follow-up	-2.672	0.577	-4.628	< .001
	EFT Posttest vs. EFT Follow-up	1.077	0.523	2.061	.709
	EFT Posttest vs. Control Follow-up	1.847	0.553	3.341	.031
	Control Posttest vs. ACT Follow-up	-3.950	0.551	-7.170	< .001
	Control Posttest vs. EFT Follow-up	-0.200	0.567	-0.354	1.000
	Control Posttest vs. Control Follow-up	0.569	0.463	1.229	1.000
	ACT Follow-up vs. EFT Follow-up	3.749	0.637	5.885	< .001
	ACT Follow-up vs. Control Follow-up	4.519	0.600	7.528	< .001
	EFT Follow-up vs. Control Follow-up	0.770	0.615	1.252	1.000
Situational Anxiety	ACT vs. EFT	-3.088	0.454	-6.798	< .001
	ACT vs. Control	-3.020	0.428	-7.050	< .001
	EFT vs. Control	0.069	0.438	0.156	1.000

The Bonferroni-adjusted comparisons in Table 3 clarified the pattern of intervention effects. For perceived controllability, the ACT with desensitization group had significantly higher scores than the control group at posttest, mean difference = 3.614, $p < .001$, and remained significantly higher than the control group at follow-up, mean difference = 4.744, $p < .001$. The difference between posttest and follow-up within the ACT with desensitization group was not statistically significant, mean difference = -1.000, $p = .150$, indicating that the improvement observed by posttest was maintained through the four-month follow-up rather than significantly declining. The EFT group did not differ significantly from the control group at posttest, $p = .347$, but had significantly higher perceived controllability than the control group at follow-up, mean difference = 3.767, $p < .001$. Moreover, perceived controllability increased significantly from posttest to follow-up within the EFT group, mean difference = -1.712, $p = .001$, indicating a delayed improvement over time. No significant difference between the ACT with desensitization and EFT groups was observed at posttest, $p = .766$, or at follow-up, $p = 1.000$. For problem-solving processing, the ACT with desensitization

group scored significantly higher than the control group at posttest, mean difference = 2.631, p < .001, and at follow-up, mean difference = 4.519, p < .001. The posttest-to-follow-up difference within the ACT with desensitization group was not significant, p = .191, indicating maintenance of the treatment-related gain. In contrast, EFT did not significantly differ from the control group at posttest, p = .228, or at follow-up, p = 1.000, and the within-group change from posttest to follow-up was also nonsignificant, p = .709. At follow-up, the ACT with desensitization group showed significantly greater problem-solving processing than the EFT group, mean difference = 3.749, p < .001. Finally, for situational anxiety, the overall adjusted group comparisons showed that the ACT with desensitization group had significantly lower anxiety than both the EFT group, mean difference = -3.088, p < .001, and the control group, mean difference = -3.020, p < .001. No significant difference was observed between the EFT and control groups, mean difference = 0.069, p = 1.000. Taken together, these findings indicate that ACT combined with desensitization produced the clearest and most consistent improvements across the study outcomes, particularly in problem-solving processing and situational anxiety, whereas the effects of EFT were more limited and were primarily evident as a delayed improvement in perceived controllability.

Discussion and Conclusion

The present study compared the effectiveness of Acceptance and Commitment Therapy (ACT) integrated with desensitization and Emotional Freedom Technique (EFT) in improving perceived controllability and problem-solving processing and reducing situational anxiety among employees of public hospitals. The findings showed that, after controlling for pretest scores, significant between-group differences emerged for all three outcomes. The ACT with desensitization group demonstrated the most consistent pattern of improvement, with higher perceived controllability and problem-solving processing and lower situational anxiety than the control group. Significant time × group interactions were also observed for perceived controllability and problem-solving processing, indicating that changes across posttest and follow-up differed according to intervention condition. EFT produced a more limited pattern of effects: it was associated with a delayed improvement in perceived controllability at follow-up but did not significantly outperform the control group in problem-solving processing or situational anxiety. These findings suggest that the integrated ACT and desensitization protocol had a broader and more stable therapeutic influence across cognitive and emotional domains than EFT in this occupational sample.

The observed increase in perceived controllability following ACT with desensitization is consistent with the theoretical foundations of ACT, which conceptualize psychological flexibility as the capacity to remain in contact with difficult internal experiences while selecting behavior that is aligned with contextual demands and personal values rather than with avoidance impulses (18, 19). In hospital employees, situational anxiety may be accompanied by perceptions that stressful events are uncontrollable, unpredictable, or overwhelming. Through acceptance, cognitive defusion, present-moment awareness, and self-as-context, ACT may reduce the dominance of anxiety-related cognitions and weaken the tendency to treat internal experiences as literal indicators of external danger. This process can create greater psychological distance from catastrophic thoughts and may increase the individual's sense that challenging situations can be approached, tolerated, and managed even when anxiety remains present. The present finding is compatible with evidence that ACT training can increase psychological flexibility and coping

capacity among health-care workers (22) and with studies linking higher psychological flexibility to better adjustment and lower distress in hospital staff (12, 13).

The desensitization component may also have contributed substantially to the increase in perceived controllability. Graded exposure to anxiety-provoking situations provides repeated experiences in which individuals remain in contact with feared stimuli without relying on habitual avoidance. Within an ACT framework, this exposure is not primarily used to suppress anxiety but to increase willingness and behavioral flexibility. Repeatedly confronting situations that had previously triggered avoidance may have allowed participants to gather corrective information about their capacity to function effectively under stress. This mechanism is particularly relevant to perceived controllability because direct experience of coping successfully with graded challenges can modify expectations of helplessness and increase confidence in managing future stressors. The broader literature on experiential psychotherapy supports the value of active, behaviorally engaged methods in producing meaningful emotional and cognitive change (23). The current results therefore suggest that combining ACT with structured desensitization may strengthen perceived control by integrating acceptance-based work with direct mastery experiences.

The significant improvement in problem-solving processing in the ACT with desensitization group can likewise be explained through the construct of cognitive flexibility. Cognitive flexibility includes the ability to generate alternative interpretations and responses and to avoid rigid adherence to a single appraisal of a difficult situation (10). Anxiety can narrow attention, increase threat-oriented processing, and encourage repetitive or avoidant response patterns. ACT may counter these effects by reducing cognitive fusion and increasing the ability to observe thoughts as transient mental events rather than as commands that must be obeyed. When combined with graded exposure, this process may broaden behavioral repertoires and support more deliberate response selection under stress. The result is also consistent with evidence linking cognitive flexibility with more adaptive psychological and social functioning (11). In the context of hospital work, where employees must frequently adapt to changing demands, interpersonal challenges, and uncertain situations, the ability to generate alternative responses may be particularly important for maintaining effective occupational functioning.

The maintenance of elevated problem-solving processing at follow-up in the ACT with desensitization group further suggests that the intervention may have influenced relatively durable regulatory processes rather than producing only short-term symptom relief. Although the within-group difference between posttest and follow-up was not statistically significant, the ACT group remained significantly superior to the control group at follow-up. This pattern is consistent with the ACT emphasis on continued skills practice, values-based action, and flexible responding after formal treatment has ended. Workplace ACT interventions have previously demonstrated benefits for psychological distress in health-care personnel (21), and evidence from other emotionally demanding occupational settings indicates that ACT-based programs can facilitate changes in psychological flexibility and emotion-regulation strategies that extend beyond the immediate intervention period (17). The current findings add to this literature by suggesting that cognitive problem-solving processes may be one of the domains through which ACT supports continued adaptation in health-care employees.

The strongest emotional finding concerned situational anxiety. Employees receiving ACT with desensitization demonstrated significantly lower situational anxiety than both the EFT and control groups,

whereas the EFT group did not differ significantly from the control group. This pattern is broadly compatible with previous reviews indicating that ACT can be effective for anxiety and related emotional disorders (20). ACT approaches anxiety differently from symptom-control models by targeting the struggle with anxiety rather than requiring that anxious thoughts and sensations be eliminated before effective action is possible. This orientation may be especially beneficial in hospital environments, where anxiety-provoking demands cannot always be removed. By increasing willingness to experience anxiety and decreasing experiential avoidance, employees may become less reactive to the presence of anxious sensations, even under continuing occupational pressure. This interpretation is supported by evidence that psychological flexibility is inversely associated with distress and is relevant to occupational functioning in medical staff (2, 13).

The reduction in situational anxiety may also reflect the contribution of desensitization. Repeated, graded contact with anxiety-provoking situations can reduce avoidance and alter threat expectancy, while ACT processes may help participants remain engaged with the exposure rather than attempting to suppress internal discomfort. The combination therefore may have produced a dual effect: reduced behavioral avoidance and a more flexible relationship with anxiety itself. This is consistent with contemporary transdiagnostic approaches in which anxiety is understood not only as a response to threat but also as being maintained by inflexible reactions to uncertainty and distress (16). Because hospital employees often face unavoidable uncertainty and emotionally intense encounters, an intervention that teaches both willingness and graded engagement may be more ecologically appropriate than an approach focused primarily on immediate affect regulation.

The limited effects of EFT observed in this study require more nuanced interpretation. EFT was associated with a significant improvement in perceived controllability at follow-up, despite showing no significant advantage over the control group at posttest for that outcome. This delayed effect may indicate that some participants required additional time and repeated independent practice before the technique translated into a greater sense of control. EFT involves directing attention to distressing cognitions or emotions while applying a structured tapping sequence, and its effects may depend substantially on practice and perceived self-efficacy in using the technique outside treatment sessions. Previous studies have reported improvements in negative mood, anxiety-related experiences, and emotional difficulties following EFT-based interventions (24, 25). The present result is therefore partially consistent with prior evidence, but it suggests that EFT may affect certain dimensions of perceived emotional control more readily than broader cognitive problem-solving or situational anxiety in hospital employees.

By contrast, EFT did not significantly improve problem-solving processing relative to the control condition. This may be attributable to differences between the mechanisms targeted by EFT and the cognitive processes measured in the study. Problem-solving processing requires the generation of alternative perspectives and behavioral options, whereas EFT is more directly oriented toward reducing the emotional charge associated with distressing thoughts, memories, and bodily sensations. Although decreasing emotional intensity may indirectly facilitate clearer thinking, the intervention does not necessarily provide explicit training in cognitive defusion, values-guided behavioral choice, or flexible perspective shifting. The stronger performance of ACT on this outcome is therefore conceptually coherent. ACT explicitly trains participants to loosen attachment to rigid cognitive content and to respond to internal experiences with openness and contextual sensitivity (18, 19). Previous work on psychological flexibility among employees has

similarly shown that flexibility can influence occupational adjustment and adaptive functioning in demanding environments (8, 15).

The absence of a significant EFT effect on situational anxiety relative to the control group is less consistent with studies reporting anxiety-related benefits from EFT. For example, previous findings have suggested that EFT may improve negative mood and anxiety-related outcomes in individuals with trait-state anxiety (25). However, differences in participant characteristics, treatment duration, intervention fidelity, baseline symptom severity, and outcome definitions may account for this discrepancy. Situational anxiety among hospital employees may be strongly tied to recurring occupational conditions and repeated exposure to unpredictable demands. A brief emotion-regulation strategy may reduce immediate arousal in selected situations but may not be sufficient to modify the broader pattern of experiential avoidance, threat appraisal, and behavioral inflexibility that sustains anxiety in the workplace. This interpretation is also compatible with broader emotion-focused literature suggesting that effective emotional change often depends on deeper processing and transformation of maladaptive emotional structures rather than on short-term arousal reduction alone (27, 28).

The present findings should also be understood in relation to the wider literature on mental health among health-care workers. Psychological distress, burnout, anxiety, and stress are persistent concerns in this workforce, and interventions have varied considerably in content and effectiveness (1). During periods of elevated occupational strain, such as public health crises, health-care employees have shown substantial levels of depression, anxiety, and stress, with flexibility-related capacities emerging as important correlates of adjustment (3). Other studies have shown that resilience, situational awareness, and psychological flexibility can influence occupational stress and turnover-related outcomes among nurses and other employees (8, 9). These findings strengthen the rationale for interventions that move beyond simple symptom reduction and instead target adaptive regulatory resources that can be applied repeatedly across changing work conditions.

The relationship between psychological flexibility and occupational functioning may also help explain why the ACT-based intervention produced more comprehensive effects than EFT. Psychological flexibility is a process-oriented construct that links emotional openness, cognitive adaptability, attention, values, and behavior. In this sense, it may serve as a higher-order regulatory resource that affects multiple outcomes simultaneously. Research has shown that inflexibility may contribute to insomnia, dysfunctional beliefs, and depressive symptoms among shift-working nurses (14), while flexibility has been associated with lower distress and stronger work engagement among intensive care staff (13). ACT directly targets this regulatory system, whereas EFT may influence a narrower set of emotional processes. The current findings therefore support the possibility that interventions aimed at higher-order flexibility processes may generate broader changes across both emotional and cognitive outcomes.

Another notable aspect of the findings is the occupational relevance of perceived controllability. Employees who perceive that they can influence or effectively respond to difficult circumstances may be less likely to experience prolonged helplessness or rigid threat appraisal. In health-care contexts, perceived control cannot always derive from changing the external environment because many stressors are inherently unpredictable. It may instead depend on confidence in one's ability to choose an effective response. This is closely aligned with ACT's emphasis on response flexibility rather than environmental control. The findings

of the present study also complement research emphasizing the importance of adaptive self-regulation and situational awareness in high-demand work environments (9). Emerging studies in occupational emotion regulation similarly highlight the value of practical techniques that can be used in real time during work-related stress (29). However, the current results suggest that a broader flexibility-based intervention may provide more comprehensive benefits than a technique directed primarily at immediate emotional modulation.

Taken together, the results support an interpretation in which ACT combined with desensitization functions through several complementary pathways. Acceptance and defusion may reduce struggle with internal experiences, mindfulness may improve awareness of present-moment cues, values clarification may strengthen motivation for adaptive action, and committed action may increase behavioral persistence in difficult situations. Desensitization then provides a structured context in which these skills can be applied directly to anxiety-provoking situations. This combination may account for the simultaneous improvement in perceived controllability, problem-solving processing, and situational anxiety. Such a mechanism is consistent with the broader ACT model of behavior change (19) and with evidence demonstrating the relevance of flexibility-based interventions for health-care and emotionally demanding workforces (17, 21, 22). By contrast, EFT appears to have produced a narrower effect, primarily emerging over time in perceived controllability, suggesting potential value as a supplementary rather than comprehensive intervention for this population.

The present study has several limitations that should be considered when interpreting the findings. First, the final sample was relatively small, which may have reduced statistical power for detecting more subtle intervention effects and limits the generalizability of the findings. Second, participants were recruited from only three public hospitals in Tehran using convenience and purposive sampling before random allocation, and the findings therefore may not generalize to employees in private hospitals, other cities, or different health systems. Third, although random group allocation was used, the study was quasi-experimental and did not include blinding of participants or intervention providers. Fourth, the outcomes were assessed using self-report questionnaires, which may be influenced by social desirability, response bias, or participants' awareness of intervention assignment. Fifth, the follow-up period was limited to four months, and therefore the long-term durability of the observed effects remains uncertain. Finally, some assumptions of parametric analysis were not fully satisfied for all outcome distributions, despite the use of robust and complementary statistical procedures.

Future research should replicate the present study with larger, multisite samples and stronger randomized controlled designs to improve external and internal validity. Studies should also include longer follow-up periods, such as 6 or 12 months, to determine whether the effects of ACT with desensitization are sustained over time. Future investigations may benefit from incorporating objective or observer-rated outcomes, including absenteeism, work performance, stress-related physiological indicators, or supervisor-rated functioning, alongside self-report measures. It would also be useful to examine psychological flexibility, experiential avoidance, emotion regulation, and perceived control as potential mediators of intervention effects. Comparative dismantling studies could test ACT alone, desensitization alone, and the integrated protocol to determine the specific contribution of each component. Additional research should also examine

whether baseline anxiety severity, occupation type, shift status, gender, work experience, or previous exposure to psychological interventions moderates treatment response.

From a practical perspective, public hospitals may consider integrating brief ACT-based programs with graded desensitization into employee mental health and occupational wellness services, particularly for personnel who experience recurrent situational anxiety in demanding clinical environments. Such programs could be delivered in small groups and incorporated into existing staff-support services, with emphasis on cognitive defusion, present-moment awareness, acceptance, values-guided action, and gradual engagement with anxiety-provoking work situations. EFT may also be offered as an adjunctive self-regulation strategy for employees who prefer a brief, easily self-administered technique, particularly for managing acute emotional activation. Hospital administrators and occupational health professionals should prioritize interventions that are feasible, repeatable, and directly applicable to real workplace stressors, while ensuring access to referral pathways for employees who require more intensive psychological or psychiatric care.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. This article was derived from the first author's doctoral dissertation in psychology at the Central Tehran Branch of Islamic Azad University. The study received ethical approval under code IR.IAU.CTB.REC.1404.191.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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References

1. Anger WK, Dimoff JK, Alley L. Addressing health care workers' mental health: A systematic review of evidence-based interventions and current resources. American Journal of Public Health. 2024;114(S2):213-26. doi: 10.2105/AJPH.2023.307556.

2. Cuenca MB, Martín MBG, García MJC. Anxiety, depression, work-related stress and psychological flexibility in nurses: A correlational-comparative study. European Journal of Health Research. 2021;7(3):3-14. doi: 10.32457/ejhr.v7i3.1713.

3. Lenzo V, Quattropani MC, Sardella A, Martino G, Bonanno GA. Depression, anxiety, and stress among healthcare workers during the COVID-19 outbreak and relationships with expressive flexibility and context sensitivity. Frontiers in Psychology. 2021;12:623033. doi: 10.3389/fpsyg.2021.623033.

4. Li Y, Khaskheli MB, Xia L. Promoting workers' health and mental well-being in the sustainable marine ecosystem sector: Legal, technological, and employment functioning. Sustainability. 2026;18(9):4175. doi: 10.3390/su18094175.

5. Kalani Z, Hossaini SM, Dadmehr M. Effect of the preparation program on the anxiety of candidate patients for cardiac electrophysiological interventions: A randomized clinical trial. Koomesh. 2019;21(4):661-6.

6. Torabi Zonouz S, Mahmoud Alilou M, Pak R. The investigate the relationship between mental-physical vulnerability and state-trait anxiety in coronavirus pandemics. Research in Cognitive and Behavioral Sciences. 2020;10(1):33-46. doi: 10.22108/cbs.2021.126358.1473.

7. Rastegari H, Hekmatpou D, Kamrani R, Farmahini Farahani M. The effect of diaphragmatic breathing training on dyspnea and state anxiety in patients with COVID-19: A randomized clinical trial. Journal of Arak University of Medical Sciences. 2023;26(1):48-54.

8. El-Ashry AM, Seweid MM, Ghoneam MA, Abdelaliem SMF, Sabek EM. Resilience in the face of pandemic: Exploring the influence of psychological flexibility on turnover intentions and burnout among critical care nurses in COVID-19 hospitals. BMC Nursing. 2024;23(1):471. doi: 10.1186/s12912-024-02039-z.

9. Rashnoudi P, Soltani E, Mohammadinejad A, Mahabadi HA. Investigating the impact of situational awareness and resilience on occupational stress: A case study of nurses in medical and educational hospitals in Ahvaz. Scientific Reports. 2025;15(1):22094. doi: 10.1038/s41598-025-06570-0.

10. Dennis JP, Vander Wal JS. The cognitive flexibility inventory: Instrument development and estimates of reliability and validity. Cognitive Therapy and Research. 2010;34(3):241-53. doi: 10.1007/s10608-009-9276-4.

11. Kazemi N, Nemati L, Yadegari SL, Abdous F. Predicting social cognition based on self-differentiation and cognitive flexibility in students. Social Psychology Research. 2023;12(48):103-16. doi: 10.22034/spr.2023.357993.1776.

12. Ramaci T, Bellini D, Presti G, Santisi G. Psychological flexibility and mindfulness as predictors of individual outcomes in hospital health workers. Frontiers in Psychology. 2019;10:1302. doi: 10.3389/fpsyg.2019.01302.

13. Holmberg J, Kemani MK, Holmström L, Öst LG, Wicksell RK. Psychological flexibility and its relationship to distress and work engagement among intensive care medical staff. Frontiers in Psychology. 2020;11:603986. doi: 10.3389/fpsyg.2020.603986.

14. Ahn MH, Suh S, Chung S. A multiple mediator model of depression, dysfunctional beliefs about sleep, and sleep effort in the relationship between psychological inflexibility and insomnia in shift working nurses. Psychiatric Quarterly. 2024;95(4):657-67. doi: 10.1007/s11126-024-10097-4.

15. Baquero A, Khairy HA, Al-Romeedy BS. Workplace stressors and the intention to quit: The role of psychological distress and psychological flexibility among hospitality employees. Tourism and Hospitality. 2025;6(2):72-88. doi: 10.3390/tourhosp6020072.

16. Figueiredo J. Understanding anxiety: The role of psychological flexibility, intolerance of uncertainty and death anxiety as transdiagnostic mechanisms: University of Southampton; 2025.

17. Yarosake M, Haenjohn J, Supwirapakorn W. Beyond surface acting: A mixed-methods investigation of an ACT-based intervention for promoting psychological flexibility and regulatory shift in hotel frontline emotional labor. Frontiers in Psychiatry. 2026;17:1785171. doi: 10.3389/fpsyt.2026.1785171.

18. Hayes SC, Luoma J, Bond F, Masuda A, Lillis J. Acceptance and Commitment Therapy: Model, processes, and outcomes. Behaviour Research and Therapy. 2006;44(1):1-25. doi: 10.1016/j.brat.2005.06.006.

19. Hayes SC, Pistorello J, Levin ME. Acceptance and commitment therapy as a unified model of behavior change. The Counseling Psychologist. 2012;40(7):976-1002. doi: 10.1177/0011000012460836.

20. Twohig MP, Levin ME. Acceptance and commitment therapy as a treatment for anxiety and depression: A review. Psychiatric Clinics of North America. 2017;40(4):751-70. doi: 10.1016/j.psc.2017.08.005.

21. Prudenzi A, Graham CD, Flaxman PE, Wilding S, Day F, O'Connor DB. A workplace Acceptance and Commitment Therapy (ACT) intervention for improving healthcare staff psychological distress: A randomised controlled trial. PLOS ONE. 2022;17(4):e0266357. doi: 10.1371/journal.pone.0266357.

22. Akcan G. The effect of Acceptance and Commitment Therapy training on psychological flexibility and stress coping skills in Bartın State Hospital health care workers: An experimental research. Turkiye Klinikleri Journal of Health Sciences. 2025;10(1):154-62. doi: 10.5336/healthsci.2024-103608.

23. Mazzucato M, Savastano M, Iudici A. Role-playing interventions in adult psychotherapy: A systematic review of clinical applications, reported outcomes, and future directions. Frontiers in Psychology. 2026;17:1749378. doi: 10.3389/fpsyg.2026.1749378.

24. Craig G, Bach D, Groesbeck G, Benor DJ. Emotional Freedom Techniques (EFT) for traumatic brain injury. International Journal of Healing and Caring. 2009;9(2):1196-206.

25. Ghorbani S, Solimanifar S. The effectiveness of emotional freedom technique on improving alexithymia and negative mood in women with trait-state anxiety. Journal of Research in Behavioural Sciences. 2022;20(3):447-58. doi: 10.52547/rbs.20.3.447.

26. Shokrolahi M, Hashemi SE, Mehrabizadeh Honarmand M, Zargar Y, Naaimi A. Comparison of the effectiveness of emotion focused therapy (EFT) and cognitive analytic therapy (CAT) on anxiety sensitivity, pain catastrophizing, experiential avoidance and cognitive emotion regulation in patients with chronic pain and alexithymia. Journal of Research in Behavioural Sciences. 2022;19(4):739-52. doi: 10.52547/rbs.19.4.739.

27. Johnson SM, Campbell TL. A primer for emotionally focused individual therapy (EFIT): Cultivating fitness and growth in every client: Routledge; 2021.

28. D'Almeida BMFC. Emotion-focused therapy, forgiveness and aging: An integrated approach to enhancing emotional well-being 2025.

29. Zhou N, Devleminck S, Geurts L. Squeeze away the worries: Exploring the potential of squeezable interactions for emotion regulation for desk workers. Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems2025. p. 1-20.