IJBMC
International Journal of Body, Mind and Culture

Volume 12, Issue 3, pp 131-139
DOI: 10.61838/ijbmc.v12i3.874

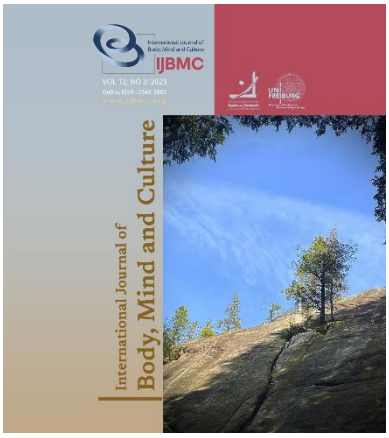
Article type:
Original Research

Effectiveness of Acceptance, Compassion, and Mindfulness-Based Interventions on Coping and Psychological Flexibility in Anxious Emergency Nurses

Elnaz. Abdolahi[1], Maryam. Nasri[2*], Fatemeh. Shahabizadeh[3]

1 PhD Student, Department of Psychology, Birjand Branch, Islamic Azad University, Birjand, Iran
2 Assistant Professor, Department of Psychology, Birjand Branch, Islamic Azad University, Birjand, Iran
3 Associate Professor, Department of Psychology, Birjand Branch, Islamic Azad University, Birjand, Iran

Corresponding author email address:
maryam_nasri_59@yahoo.com



Article history:

Received 23 Dec 2024
Revised 14 Jan 2025
Accepted 27 Feb 2025
Published online 28 Mar 2025

How to cite this article:
Abdolahi, E., Nasri, M., & Shahabizadeh, F. (2025). Effectiveness of Acceptance, Compassion, and Mindfulness-Based Interventions on Coping and Psychological Flexibility in Anxious Emergency Nurses. International Journal of Body, Mind and Culture, 12(3), 131-139.

ABSTRACT

Objective: This study investigated the effectiveness of a combined intervention model based on acceptance, compassion, and mindfulness in improving coping strategies and psychological flexibility among emergency department nurses with anxiety.

Methods and Materials: A quasi-experimental pre-test and post-test design was employed, involving 40 nurses purposively selected from hospitals in Nishapur. Participants were randomly assigned to experimental and control groups, with the former undergoing a 12-session intervention, each lasting 60 minutes, while the latter received no training. Data were collected using the Beck Anxiety Inventory (1988), Endler and Parker Coping Styles Questionnaire (2005) and the Dennis and Vander Wal Psychological Flexibility Scale (2010). Statistical analysis, including multivariate covariance analysis (MANCOVA), was performed to assess the intervention's impact.

Findings: Results showed significant improvements in the experimental group's coping strategies and psychological flexibility compared to the control group. Nurses in the intervention group reported better use of problem-focused coping strategies and demonstrated higher levels of psychological flexibility, enabling them to adapt more effectively to workplace stress and anxiety.

Conclusion: The findings underscore the value of integrated psychological interventions that combine acceptance, compassion, and mindfulness in addressing anxiety and stress among healthcare professionals. By enhancing adaptive coping mechanisms and fostering flexibility, this approach offers a comprehensive and practical solution to improving the mental well-being of nurses in high-stress environments. Future research is recommended to replicate these findings in larger and more diverse samples, as well as to explore the long-term benefits of such interventions on job satisfaction and overall mental health in healthcare settings.

Keywords: Mindfulness, anxiety, coping skills.

Introduction

Today, the healthcare system is regarded as one of the most critical societal institutions, tasked with saving lives and improving public health. Within this system, nurses play a pivotal role, often serving as the primary point of contact between patients and healthcare providers. Emergency department nurses, in particular, face unique and intense stressors due to the high-pressure environment in which they work. Prolonged exposure to excessive stress has been shown to lead to mental health issues such as anxiety, depression, and burnout, which can adversely impact their job performance and overall well-being (Bian et al., 2025; Chen, 2025). Nurses working in emergency departments are routinely exposed to professional stressors,

including constant interactions with patients, responsibility for human health, dealing with critical medical situations, and the emotional toll of handling life-and-death scenarios. While moderate levels of stress may enhance performance by improving focus, excessive or chronic stress can lead to psychological distress, including anxiety and emotional exhaustion (Liu et al., 2025). Addressing these mental health challenges is vital not only for the well-being of nurses but also for improving the quality of care provided to patients.

Coping strategies play a crucial role in mitigating the harmful effects of workplace stress. According to Lazarus and Folkman (1984), coping is defined as the cognitive and behavioral efforts made to manage specific internal or external demands perceived as taxing or exceeding an individual's resources. Coping strategies can broadly be categorized into problem-focused and emotion-focused approaches. Problem-focused strategies aim to resolve the source of stress by employing rational problem-solving and self-restraint, whereas emotion-focused strategies seek to alleviate distress by avoiding or reframing the situation through mechanisms such as wishful thinking, avoidance, or self-blame (Bakhtiyarovich et al., 2023; Davoudi-Monfared et al., 2023). Adaptive coping strategies, such as problem-solving, can reduce stress and restore psychological balance, while maladaptive strategies, such as avoidance, may perpetuate distress.

Research indicates that emergency department nurses frequently rely on maladaptive coping mechanisms such as behavioral avoidance and emotional suppression, which can exacerbate anxiety and psychological inflexibility (Kim & Choi, 2016; Ridner, 2004). Addressing these patterns is essential to improve mental health and facilitate better stress management among nurses. Psychological flexibility is a critical construct in understanding how individuals adapt to stress and maintain mental health. Defined as the ability to adapt to changing environmental demands while remaining committed to one's values, psychological flexibility plays a pivotal role in maintaining balance across different life domains. It encompasses accepting challenging situations, reframing one's mindset positively, and employing effective coping strategies. Higher levels of psychological flexibility are associated with better health outcomes, reduced conflict, and increased use of adaptive coping strategies (Richardson & Jost, 2019).

In recent years, psychological flexibility has emerged as a central focus of third-wave cognitive-behavioral therapies, such as Acceptance and Commitment Therapy (ACT). Unlike traditional cognitive-behavioral therapy (CBT), which focuses on altering cognitive content, ACT emphasizes accepting thoughts and feelings and committing to value-driven behaviors (Hayes, 2004; Hayes, Barnes-Holmes, et al., 2016; Hayes et al., 2009; Hayes et al., 2012; Hayes, Strosahl, et al., 2016). This approach aligns well with the challenges faced by nurses, who must often navigate high-stress environments without the luxury of avoiding or suppressing negative emotions.

Although CBT remains a widely used intervention for anxiety and stress-related disorders, its effectiveness is often limited by patients' difficulties in altering thought patterns. Moreover, group-based CBT interventions may not yield satisfactory outcomes for all individuals, particularly those with deeply entrenched cognitive inflexibility (Anvari et al., 2014). Such limitations have prompted researchers to explore alternative therapeutic approaches that focus on enhancing psychological flexibility rather than attempting to restructure thoughts. Third-wave therapies, including ACT, mindfulness-based cognitive therapy (MBCT), and compassion-focused therapy (CFT), have gained traction as promising alternatives. These approaches aim to foster psychological flexibility by promoting mindfulness, acceptance, and self-compassion, enabling individuals to engage in adaptive behaviors despite the presence of distressing emotions or thoughts (Hakimi et al., 2014; Hayes, 2004).

The integration of acceptance, compassion, and mindfulness into a unified intervention model represents a novel approach to addressing anxiety and psychological inflexibility. Acceptance involves acknowledging and embracing one's thoughts and emotions without judgment, while mindfulness encourages present-moment awareness and detachment from negative thought patterns. Compassion, particularly self-compassion, emphasizes fostering kindness and understanding toward oneself during periods of difficulty, which has been shown to reduce anxiety and enhance resilience (Neff, 2003, 2008, 2011, 2013). This integrated model combines the strengths of

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these approaches to address the multifaceted nature of stress and anxiety in healthcare settings. By enhancing self-awareness, emotional regulation, and adaptive coping mechanisms, the intervention aims to equip nurses with practical tools for managing workplace stress. Unlike traditional therapies that target specific cognitive distortions, this model provides a holistic framework for improving mental health and well-being.

Nurses are particularly susceptible to anxiety due to the emotional and physical demands of their profession. Anxiety not only affects their psychological health but also compromises their ability to deliver quality patient care. Studies have highlighted the detrimental effects of workplace anxiety on nurses' job satisfaction, interpersonal relationships, and overall performance (Kim & Choi, 2016; Mosadeghrad, 2013; Ridner, 2004). Consequently, developing effective interventions to address anxiety in this population is of paramount importance. Healthcare professionals, particularly emergency department nurses, often exhibit symptoms of psychological inflexibility, such as rumination, avoidance, and self-criticism, which exacerbate stress and anxiety. Research suggests that targeted interventions focused on acceptance, compassion, and mindfulness can help nurses develop more adaptive responses to workplace stressors, thereby improving their psychological resilience and job performance (Kim & Choi, 2016).

Despite the growing body of research on third-wave therapies, limited studies have examined the combined effectiveness of acceptance, compassion, and mindfulness-based interventions in addressing anxiety and psychological inflexibility among nurses. Existing research often focuses on individual components, such as mindfulness or compassion, rather than integrating these approaches into a cohesive model. This study seeks to fill this gap by evaluating the impact of a comprehensive intervention model that combines these elements. This study aims to investigate the effectiveness of an integrated intervention model based on acceptance, compassion, and mindfulness in improving coping strategies and psychological flexibility among emergency department nurses with anxiety. By addressing the limitations of traditional interventions and emphasizing a holistic approach, the study seeks to contribute to the growing literature on innovative therapeutic models for healthcare professionals.

Methods and Materials

Study Design and Participants

The present study utilized a quasi-experimental design with experimental and control groups, employing a pre-test and post-test structure.

The statistical population consisted of all nurses with anxiety working in emergency departments of hospitals in Nishapur. A total of 40 nurses with high levels of anxiety (cut-off score of 27) were identified using purposive sampling, considering the inclusion criteria. They were then randomly assigned to two groups: experimental and control. Based on the semi-experimental research method, the recommended sample size for each group is 15 participants (Gall, Borg, & Gall, 2003; as cited in Sarmad & Bazargan, 2019). To account for possible attrition and enhance generalizability, each group included 20 participants. The inclusion criteria for participation were: Not receiving simultaneous psychological interventions, A minimum of 3 years of work experience, Consent to participate in the therapeutic sessions and Employment in emergency departments of Nishapur hospitals. Exclusion criteria included missing more than two sessions and lack of willingness to continue participation.

After coordinating with hospital administrators in Nishapur, a call for participation was announced. From the interested individuals, 40 eligible participants meeting the inclusion criteria were selected through purposive sampling and randomly assigned to experimental and control groups (20 participants each). Following group formation, both groups completed pre-tests using the aforementioned questionnaires. The experimental group underwent the 12-session integrated intervention on acceptance, compassion, and mindfulness. The control group received no intervention during this period. Upon completion of the sessions, post-tests were administered to both groups.

Instruments

Endler and Parker Coping Styles Questionnaire: This questionnaire, developed by Endler and Parker in 1990, measures three coping styles: problem-focused coping, emotion-focused coping, and avoidance coping. Avoidance coping includes two subscales: "seeking social

support" and "engaging in activities." Each coping style is represented by a separate 16-item scale, and subscales for avoidance coping contain 8 items each. Participants rate each item on a 5-point Likert scale, ranging from 1 (never) to 5 (very often). Total scores range from 48 to 240. The questionnaire's reliability and validity have been confirmed in domestic studies, with Cronbach's alpha coefficients ranging from 0.70 to 0.86 (Alborzi & Khosh Lahjeh Sedgh, 2023; Pv, 2025). In this study, Cronbach's alpha was 0.84.

Psychological Flexibility Questionnaire*:* Developed by Dennis and Vander Wal (2010), this 20-item questionnaire evaluates an individual's progress in clinical and non-clinical settings and their ability to develop flexible thinking. It uses a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree), with higher scores indicating greater psychological flexibility. Total scores range from 20 to 140. Dennis and Vander Wal reported acceptable factor structure, convergent validity, and concurrent validity. Cronbach's alpha coefficients for the total scale, perceived control, and perceived options were 0.91, 0.91, and 0.84, respectively. In a study by Kohandani, Abolmaali, and Al-Hosseini (2018), internal consistency for the total scale and its subscales was reported as 0.893, 0.779, and 0.81, respectively (Alokandeh, 2024; Cao et al., 2024).

Beck Anxiety Inventory (BAI)*:* Developed by Beck in 1988, this 21-item questionnaire assesses the severity of anxiety symptoms, including cognitive, physical, and phobic manifestations. Each item is rated on a 4-point scale, from 0 (not at all) to 3 (severely), with higher scores indicating greater anxiety. Internal consistency (Cronbach's alpha) is 0.92, test-retest reliability is 0.75, and item correlations range from 0.30 to 0.76. This inventory has demonstrated high reliability and validity in both domestic and international studies (Askari Azghandi & Choobforoushzadeh, 2024).

Intervention

Integrated Intervention Package on Acceptance, Compassion, and Mindfulness: This intervention was conducted over 10 sessions of 120 minutes each (one session per week). The intervention content was adapted from "Compassion-Focused Therapy for ACT Practitioners" by Dennis Tirch et al. (2014), "Compassion-Focused Therapy" by Paul Gilbert (2010), and "Acceptance and Commitment Therapy" by Izadi and Abedi (2014). The session details are summarized below:

The intervention package on acceptance, compassion, and mindfulness was delivered in ten structured sessions, each designed to build upon the previous and foster emotional well-being. The program began in Session 1 by establishing rapport, introducing participants to the structure and goals of the sessions, discussing treatment principles, outlining study objectives, and administering baseline questionnaires while emphasizing the importance of active participation. In Session 2, participants engaged in mindfulness training through body scan and breathing exercises and were introduced to the brain systems related to compassion. Session 3 focused on identifying the traits of compassionate individuals and guided participants in developing warmth and kindness toward themselves, incorporating mindful yoga as a technique for stress relief. Session 4 promoted self-awareness by encouraging participants to explore their personal patterns and tendencies regarding compassion. During Session 5, participants examined their responses to stress and were introduced to healthier, alternative attitudes and behaviors for navigating difficult experiences. Session 6 introduced the concept of acceptance using metaphors such as "The Guest" and differentiated between clean and dirty suffering, with the aim of cultivating empathy and self-compassion. Session 7 further deepened self-compassion practices by introducing core components like wisdom, capability, warmth, and responsibility to reinforce compassionate behavior. In Session 8, participants engaged in group practices involving mindful awareness and visualization to strengthen compassion for both themselves and others. Session 9 emphasized identifying valued goals and designing actionable pathways to support personal and health-related growth. Finally, Session 10 served as a wrap-up, where all sessions were reviewed, and participants completed the post-test to evaluate the impact of the intervention.

Data Analysis

Data were analyzed using SPSS version 22. Descriptive statistics (mean, standard deviation) were calculated, and MANCOVA was employed to assess the intervention's effects while controlling for baseline differences. Assumptions of normality, homogeneity of

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variances, and regression slopes were verified. Missing data were handled using mean imputation for participants missing fewer than two sessions.

Findings and Results

The majority of participants, 26 individuals (65%), were female. Regarding age distribution, 40% of the target population was aged between 25 and 35 years, 30% between 36 and 45 years, and 30% above 46 years. Most participants held a bachelor's degree (70%). The descriptive statistics for coping strategies and psychological flexibility at pre-test and post-test stages are presented in Table 1.

Table 1

Mean (M) and Standard Deviation (SD) for Research Variables

Variable	Group	Pre-Test M (SD)	Post-Test M (SD)
Coping Strategies	Experimental	16.86 (4.33)	29.26 (3.83)
	Control	14.71 (4.23)	14.21 (6.14)
Psychological Flexibility	Experimental	39.33 (9.27)	53.8 (8.64)
	Control	44.13 (9.03)	48.2 (6.73)

The normality of the data was verified using the Shapiro-Wilk test, with p-values exceeding 0.05, indicating that the data were normally distributed. Additionally, Levene's test for homogeneity of variances confirmed that variances were equal across groups, with all p-values above 0.05. These results support the appropriateness of using parametric tests for data analysis. To evaluate the effects of the integrated intervention model based on acceptance, compassion, and mindfulness on coping strategies and psychological flexibility in nurses with anxiety, ANCOVA was employed. For the variable of coping strategies, Mauchly's test of sphericity indicated a significance level below 0.05, suggesting a violation of sphericity. Consequently, Greenhouse-Geisser correction was applied as the epsilon value was less than 0.75. The results for coping strategies and psychological flexibility are presented in the Table 2.

Table 2

ANOVA Results for Coping Strategies and Psychological Flexibility

Variable	Source	SS	df	MS	F	P-value	partial η^2
Coping Strategies	Time	16.75	2	8.38	3.12	0.050	0.09
	Group * Time	22.40	2	11.20	4.17	0.020	0.12
	Group	45.65	1	45.65	7.29	0.010	0.19
Psychological Flexibility	Time	126.533	2	63.267	5.83	0.004	0.122
	Group * Time	335.956	2	167.978	7.74	0.001	0.269
	Group	495.511	1	495.511	16.843	0.001	0.69

The experimental group showed a statistically significant increase in coping strategies from pre-test to post-test compared to the control group ($F= 7.29$, $p= 0.01$, $\eta^2 = 0.19$). The interaction effect (Group × Time) was also significant ($F= 4.17$, $p= 0.02$), indicating that the change over time was greater in the experimental group. A significant main effect of the group was observed for psychological flexibility ($F= 16.84$, $p<0.001$, $\eta^2= 0.69$). The interaction effect was also significant ($F=7.74$, $p<0.001$), highlighting the intervention's substantial impact on this variable. Effect sizes (partial η^2) indicate that the intervention had a moderate effect on coping strategies ($\eta^2 = 0.19$) and a large effect on psychological flexibility ($\eta^2 = 0.69$). These findings suggest that the integrated intervention was not only statistically significant but also clinically meaningful.

Table 3

Pairwise Comparisons for Coping Strategies and Psychological Flexibility

Variable	Comparison	Mean Difference	Standard Error	p-value
Coping Strategies	Pre-Test vs Post-Test	12.40	0.50	0.0002
	Pre-Test vs Follow-Up	10.57	0.57	0.004
	Post-Test vs Follow-Up	1.83	0.40	0.61
Psychological Flexibility	Pre-Test vs Post-Test	14.47	0.47	<0.0001
	Pre-Test vs Follow-Up	11.93	0.51	<0.0001
	Post-Test vs Follow-Up	2.54	0.38	0.34

Significant improvement was observed in coping strategies from pre-test to post-test (p=0.0002) and from pre-test to follow-up (p= 0.004). No significant difference was found between the post-test and follow-up (p= 0.61), indicating that the improvement achieved during the intervention was sustained. Significant increases were observed in psychological flexibility from pre-test to post-test ($p < 0.0001$) and from pre-test to follow-up ($p<0.0001$). The difference between post-test and follow-up was not significant ($p = 0.34$), suggesting that the gains in psychological flexibility were maintained over time.

The intervention had a significant positive impact on both coping strategies and psychological flexibility. Improvements achieved during the intervention were largely sustained at follow-up, with no significant decline between the post-test and follow-up stages for either variable.

Discussion and Conclusion

The findings of this study indicate that the integrated intervention model based on acceptance, compassion, and mindfulness had significant positive effects on coping strategies and psychological flexibility among emergency department nurses with anxiety. These results are consistent with previous studies highlighting the efficacy of third-wave therapies in addressing psychological distress and promoting adaptive behaviors (Andrews et al., 2018; Anvari et al., 2014; Anvari, 2023). By providing a holistic approach, this intervention effectively addressed both emotional and cognitive aspects of stress, enabling participants to navigate workplace challenges more effectively.

One of the most significant findings was the improvement in coping strategies. Participants in the experimental group demonstrated a shift from maladaptive emotion-focused coping mechanisms, such as avoidance and wishful thinking, to more adaptive problem-focused strategies, such as rational problem-solving and self-restraint. This transition aligns with theories emphasizing the importance of adaptive coping in reducing stress and improving psychological well-being (Buttler et al., 2011; Ohayashi & Yamada, 2012). These changes suggest that the intervention successfully equipped nurses with practical tools for managing workplace stress and responding more effectively to emotionally taxing situations.

The observed improvement in psychological flexibility is also noteworthy. Psychological flexibility, defined as the ability to adapt to changing circumstances while remaining aligned with one's values, is a core component of mental health and resilience. The intervention likely facilitated this improvement by encouraging participants to accept their emotions and thoughts without judgment, develop mindful awareness, and engage in value-driven actions. This finding is supported by the theoretical framework of Acceptance and Commitment Therapy (ACT), which posits that psychological flexibility enables individuals to respond adaptively to stress and reduce experiential avoidance (Hayes, 2004; Hayes, Barnes-Holmes, et al., 2016; Hayes et al., 2009; Hayes et al., 2012; Hayes, Strosahl, et al., 2016).

The integration of compassion-focused practices likely contributed to these outcomes. Self-compassion, in particular, has been shown to reduce the impact of self-criticism, foster resilience, and improve emotional regulation (Neff, 2003, 2008, 2011, 2013). By cultivating self-kindness and empathy, participants may have developed a more constructive relationship with

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themselves, which in turn enhanced their ability to cope with workplace stressors.

Statistical analyses revealed significant main effects for both coping strategies and psychological flexibility, with large effect sizes (for psychological flexibility). These findings underscore the clinical relevance of the intervention and suggest that even a short-term program can produce meaningful changes in psychological outcomes. While statistical significance provides evidence of the intervention's efficacy, the large effect sizes highlight its practical importance for improving nurses' mental health in high-stress environments.

Despite these promising findings, the study also revealed areas for further exploration. For example, changes in emotion-focused coping styles were less pronounced than in problem-focused strategies. This may reflect the deep-rooted nature of maladaptive coping mechanisms, which require longer or more intensive interventions to achieve significant improvements. Additionally, the absence of a follow-up phase limits the ability to evaluate the sustainability of the observed effects over time. Longitudinal studies are needed to assess whether the benefits of the intervention persist and to explore the factors that contribute to maintaining psychological flexibility and adaptive coping in the long term.

The findings of this study have several practical implications. First, they highlight the potential of integrated interventions to address the unique challenges faced by healthcare professionals, particularly nurses in emergency departments. By combining acceptance, compassion, and mindfulness, the intervention provides a comprehensive framework for enhancing self-awareness, emotional regulation, and resilience. These improvements can not only benefit individual nurses but also positively impact patient care by reducing burnout and enhancing job performance. Second, the scalability and cost-effectiveness of the intervention make it a viable option for widespread implementation in healthcare settings. Training programs for nurses and other healthcare professionals can incorporate elements of this intervention to promote mental health and well-being. Such initiatives could play a critical role in addressing the high levels of stress and anxiety commonly reported in the healthcare sector.

Finally, the study underscores the importance of adopting holistic approaches to mental health interventions. Traditional therapies, such as cognitive-behavioral therapy (CBT), often focus on altering thought patterns, which may not fully address the emotional and relational aspects of stress. In contrast, the integrated intervention model used in this study combines cognitive, emotional, and relational components, making it particularly well-suited for addressing the complex psychological needs of healthcare professionals.

However, the study is not without limitations. The small sample size and reliance on self-reported measures limit the generalizability and objectivity of the findings. Although the study employed validated instruments, self-reports are inherently subjective and may be influenced by social desirability bias. Future research should incorporate objective measures, such as physiological indicators of stress, to complement self-reported data. Additionally, the study was conducted in a specific cultural and occupational context, focusing exclusively on nurses in emergency departments in Nishapur. Further research is needed to examine the intervention's applicability to other populations, such as doctors, caregivers, and healthcare workers in different settings or cultural contexts.

The lack of a follow-up phase is another limitation that should be addressed in future studies. While the post-test results provide evidence of the intervention's immediate impact, they do not capture the sustainability of these effects. Longitudinal research that includes follow-up assessments at three, six-, or twelve-months post-intervention would provide valuable insights into the long-term benefits of the program. Moreover, the study used a control group that did not receive any intervention. While this approach helps isolate the effects of the integrated intervention, future studies could include an active control group receiving a standard stress management program. This would enable researchers to compare the relative effectiveness of the integrated model against other established approaches.

This study demonstrates the significant positive impact of an integrated intervention model based on acceptance, compassion, and mindfulness on coping strategies and psychological flexibility among emergency department nurses with anxiety. The findings contribute to the growing body of evidence supporting the efficacy of third-wave therapies in enhancing

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psychological well-being and resilience in high-stress environments. By equipping nurses with tools to manage stress, regulate emotions, and foster self-compassion, the intervention addresses critical mental health challenges faced by healthcare professionals. The improvements observed in problem-focused coping strategies and psychological flexibility underscore the potential of this model to enhance both individual well-being and the quality of patient care.

Despite its strengths, the study's limitations highlight the need for further research. Larger, more diverse samples, objective measures, and longitudinal designs will be essential to validate and extend these findings. Additionally, exploring the intervention's applicability to other healthcare roles and cultural contexts will help establish its broader relevance. In conclusion, this study provides a strong foundation for the development and implementation of holistic psychological interventions tailored to the needs of healthcare workers. By fostering psychological flexibility, adaptive coping, and resilience, these interventions can play a critical role in promoting mental health and well-being in high-stress professional settings.

Acknowledgments

The authors extend their gratitude to all participants in the 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. Ethical considerations in this study were that participation was entirely optional.

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.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

All authors equally contribute to this study.

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