Effectiveness of Mindfulness-Based Cognitive Flexibility Training on Nurses' Job Satisfaction

Mina. Parvaresh[1], Nooshin. Taghinezhad[2*], Azita. Amirfakhraei[2], Mahmoud. Sabahizadeh[2]

[1] Ph.D Student of Psychology, Department of Psychology, Bandarabbas Branch, Islamic Azad University, Bandarabbas, Iran
[2] Assistant Professor, Department of Psychology, Bandarabbas Branch, Islamic Azad University, Bandarabbas, Iran

* Corresponding author email address: nooshin.taghinejad@gmail.com

Article Info

Article type:

Original Research

ABSTRACT

Objective: The current study aimed to investigate the effectiveness of mindfulness-based cognitive flexibility training on nurses' job satisfaction.

Methods and Materials: This research was applied in nature and, regarding its data type, was a quasi-experimental design with a pre-test-post-test control group setup. The study population included nurses working in hospitals in Bandar Abbas during the years 2021-2022. The sample size was determined to be 30 using Cochran's formula and convenience sampling method. The measurement instrument was the standard Minnesota Job Satisfaction Questionnaire (1967). To calculate validity, content validity was used, and for reliability calculation, Cronbach's alpha coefficient ($\alpha > 0.7$) was utilized, indicating the instrument's validity and reliability. Data analysis included descriptive statistics (mean, standard deviation, etc.) and inferential statistics (mixed-design ANOVA with repeated measures).

Findings: The results showed that mindfulness-based cognitive flexibility training improved nurses' job satisfaction. Based on the results, the designed protocol's effectiveness on nurses' job satisfaction over time was examined, indicating the designed protocol's effectiveness.

Conclusion: Considering the high prevalence of job burnout and psychological distress symptoms among nurses, a group training program for mindfulness-based cognitive flexibility can be recommended to increase job satisfaction in hospital-employed nurses.

Keywords: Cognitive flexibility, mindfulness, job satisfaction, nurses.

1. Introduction

Nursing is one of the most challenging and stressful professions in the world, where factors such as work environment, high workload, insomnia, continuous exposure to unpleasant events, the nature of the caregiving role, lack of sufficient support, job conflicts, and conflicts among colleagues are among the most significant sources of stress (Tajuddin & Ambad, 2021). This work-related stress is especially intensified in healthcare emergencies (Senek et al., 2020). As the COVID-19 crisis emerged as a serious health emergency (Giménez-Espert et al., 2020), it imposed

unprecedented pressure on healthcare workers, particularly nurses on the front lines, facing them with numerous challenges (Alameddine et al., 2021) and reducing their job satisfaction, health, and quality of life (Iskandarsyah et al., 2021). During this crisis, the problem of nursing staff shortage worsened (Joshua et al., 2021), and many nurses, regardless of their readiness, were transferred to specialized COVID care centers (Zaghini et al., 2021). Despite the fact that the most prominent characteristics of nurses such as a sense of responsibility and commitment to care, sacrifice, and professional empathy have become more pronounced during the pandemic (Savitsky et al., 2021), highlighting the role and value of nurses' work globally (Llego & Pangket, 2021), the extensive stresses that have arisen (Afulani et al., 2021), along with excessive work pressure, have negatively impacted nurses' job satisfaction (Bayer et al., 2021). It is important for organizations that nursing staff remain satisfied with their jobs during the COVID-19 pandemic (Lavoie-Tremblay et al., 2022). Job satisfaction is defined as a positive emotional state resulting from an individual's job or aspects thereof. Satisfied nurses are more likely to stay in their profession, and organizations are satisfied with them (Labrague, 2021; Labrague & de los Santos, 2021). The concept of job satisfaction was first used by Locke (1976) in the theory of job satisfaction, defining it as a positive emotional state resulting from an individual's evaluation of their job and all aspects related to it or their job perception (Labrague & de los Santos, 2021). Job satisfaction includes comparing job content and expected rewards with actual ones in a specific environment, and positive satisfaction occurs when the actual rewards or feelings received meet expectations (Parsakia et al., 2022; Wijaya & Martini, 2020). Furthermore, job satisfaction is affected by a set of external factors such as working conditions and internal factors such as self-efficacy beliefs and is important for maintaining the mental and physical health of nurses and improving the quality of services. Especially since the quality of nursing services determines the quality and level of hospital services, and any effort to improve hospital service quality is inseparable from improving the quality of nursing services (Berlin et al., 2022). Additionally, the job satisfaction of frontline healthcare providers is directly linked to the implementation and effectiveness of strategies for preventing and controlling major crises (Buheji & Buhaid, 2020). Recent studies have shown that job satisfaction is very important for ensuring patient care quality and nurses' intentions (Yu et al., 2020).

Several factors are important in increasing nurses' job satisfaction, one of which is cognitive flexibility. Cognitive flexibility is one of the most effective intervention models for weakening problematic psychological processes and creating more functional processes (Macías et al., 2019). Cognitive flexibility is a core structure in third-wave behavioral therapies that focus on processes rather than the content of thoughts and language. In this respect, cognitive flexibility can be briefly described as an approach that is "open, aware, and active" in facing internal and external pressures and challenges (Ledda et al., 2017). Although the emphasis on goal-directed behavior is not unique in psychological literature, mindfulness strengthens the relationship between individuals' performance and their psychological flexibility. Moreover, individuals, by engaging with their internal experiences, do not spend their time and cognitive resources on controlling and incorrectly managing their psychological experiences. As a result, they have more resources to focus on opportunities related to their goals and anticipated in their current conditions (Ramaci et al., 2019; Ramaci et al., 2017). Several studies indicate that cognitive flexibility has a positive relationship with job satisfaction and can predict health outcomes, attitudes, and productivity in organizational settings. Individuals, by engaging with values related to potential events, increase their sense of efficacy and improve their health levels (Harris, 2024; Ramaci et al., 2017).

Recently, third-generation cognitive-behavioral therapies such as mindfulness-based therapy have focused on targeting individuals' needs. Mindfulness-based therapy is a non-pharmacological approach that can be considered as a therapeutic option to help increase happiness and mental health in nurses (Petter et al., 2014). Mindfulness, due to its underlying mechanisms such as acceptance, increased awareness, desensitization, presence in the moment, and non-judgmental observation, can reduce symptoms and consequences of illness, increase treatment efficacy, and help prevent relapse (Lindsay & Creswell, 2017). Kabat-Zinn's approach to treating patients includes body scanning or body awareness techniques, involving a series of deliberate changes focused on the entire body and then on each part of the body in a non-judgmental manner (Slutsky et al., 2019). Through mindfulness-based exercises, an individual learns to give alternative responses to emotional discomforts and reduce conditioned responses. In mindfulness, individuals learn to accept experiences as separate from themselves and as a transient state subject to change (Bennike et al., 2017). Mindfulness exercises aim to

increase distinct awareness of acceptance, specifically focusing on physical and emotional discomforts, teaching clients to observe emotional, physical, and cognitive states without involuntary reactions (McConville et al., 2017). Research has shown that balanced meditation, mindfulness meditation, Vipassana meditation, yoga, and other meditation techniques have had a significant impact on improving the rehabilitation of various patients (Tang et al., 2019). Studies indicate that mindfulness therapy is associated with various health outcomes such as pain reduction, anxiety, and depression (Hofmann & Gómez, 2017) and stress (Carpenter et al., 2019). Ramcai and colleagues (2019) concluded that cognitive flexibility does not modulate the relationship between mental and physical health. Instead, mindfulness is strongly associated with mental and physical health. Employees who demonstrate cognitive flexibility are likely to show more openness to setbacks in the work environment and continue their valuable life and work (Ramaci et al., 2019).

The aim of this research is to create an intervention that helps nurses improve their job satisfaction. This program identifies nurses who are dissatisfied with their job and reduces these symptoms. Early detection of dissatisfaction helps nurses identify stressors in the initial stages and their own findings, increase job satisfaction, and help create a balance in work life. Overall, it can be stated that specifically, no research has been conducted on the ideal model of promoting mindfulness-based cognitive flexibility; on the other hand, one of the most important features of the present research is to investigate the determination of the effectiveness of the model of promoting mindfulness-based cognitive flexibility and its effectiveness on job satisfaction in nurses, which has been addressed in few studies. Therefore, the researcher intends to address this issue in this research: Is the model of promoting mindfulness-based cognitive flexibility effective on job satisfaction in nurses?

2. Methods and Materials

2.1. Study Design and Participants

The research method was quasi-experimental, and the design used in this study was a pre-test-post-test with a control group, along with follow-up. The study population consisted of all nurses working in the hospitals of Bandar Abbas in the years 2022-2023. The sampling method in this study was non-random convenience sampling. Since the research was intervention-based, a minimum sample size of 15 individuals per group was considered (Khodayarifard et

al., 2002). Thus, 30 individuals were randomly assigned (random replacement based on group matching method based on initial data) into an intervention group and a control group based on inclusion and exclusion criteria. Entry conditions for the study included: having a nursing degree at the bachelor level or higher, not suffering from chronic illness, not taking medications related to mental disorders, not experiencing traumatic events in the last six months, not participating in other psychological courses concurrently. Exit conditions from the study were: absence in more than two therapy group sessions and not wishing to continue treatment. After identifying the group members, in the first session, the process was explained, including the objectives, schedule, implementation of the plan, benefits of participating in therapy sessions, and how to withdraw if desired. Research scales were provided to the group, and explanations on how to respond were given. Finally, participants were randomly divided into two experimental groups and one control group, and the start date of the sessions was determined. The experimental group received 11 sessions of 90-minute training, and the control group was placed on a waiting list. Also, to address ethical issues of the research, a consent form was prepared explaining the general purpose of the research. Participants first read the consent form and participated in the research if they wished.

2.2. Measures

2.2.1. Job Satisfaction

The Minnesota Satisfaction Questionnaire-Short Form (1967), which consists of 20 questions, was used. This questionnaire was translated by Sharifi and Najar (2015). The questionnaire covers aspects such as supervisors' competencies, working conditions, rewards, job variety, levels of job responsibility, and opportunities for advancement and is a rating scale for different levels of satisfaction and dissatisfaction (ranging from very satisfied to very dissatisfied). The Minnesota questionnaire is based on the assumption that satisfaction and dissatisfaction are part of a bipolar continuum that measures job satisfaction by summing scores and two subscales of external and internal satisfaction. Sharifi and Najar (2015) normalized this questionnaire. The reliability of this questionnaire in this study was obtained at 0.97. Factor analysis was used to determine the validity of the questionnaire. These researchers state that this tool can be used as a valid instrument for measuring employees' job satisfaction (Parsakia et al., 2022). In this study, since the job satisfaction

questionnaire used was standardized, its validity was confirmed by the supervisor. The reliability of the job satisfaction questionnaire in this study was obtained based on Cronbach's alpha test at 0.77, which is considered suitable.

2.3. Interventions

2.3.1. Mindfulness-Based Cognitive Flexibility Training

Interventions are strategies for behavior change aimed at solving a problem or improving a situation, implemented in a targeted manner. Complex interventions consist of several components that may act independently or interdependently on each other. These interventions consider different groups or levels of the target population and strive to impact multiple outcomes. Ideally, a complex intervention is developed through collaboration among diverse interdisciplinary workgroups consisting of researchers, psychologists, sociologists, members of the target community, and policymakers. Such collaborative efforts are likely to increase the acceptance by the target community and the success of the intervention. Moreover, intervention strategies, ranging from simple to complex interventions, are arranged to meet the unique needs of a specific situation (Puolakanaho et al., 2020; Ramaci et al., 2019). The following presents a six-step guide framework for developing high-quality interventions. The table below includes the mindfulness-based cognitive flexibility training package:

Session 1: Introduction to Mindfulness and Cognitive Flexibility

The first session introduces participants to the concepts of mindfulness and cognitive flexibility. It outlines the program's goals, discusses the importance of presence and awareness in both personal and professional life, and explores the relationship between cognitive flexibility, mindfulness, and job satisfaction. Participants engage in a brief mindfulness exercise to ground themselves in the present moment and set the tone for the entire program.

Session 2: Foundations of Mindfulness

This session delves into the foundational principles of mindfulness, including the importance of living in the present moment and accepting experiences without judgment. Participants practice mindfulness meditation and are introduced to exercises that help increase awareness of their thoughts, emotions, and body sensations, fostering a state of open, non-judgmental awareness.

Session 3: Developing Cognitive Flexibility

Participants explore the concept of cognitive flexibility, understanding its significance in adapting to new information, perspectives, and situations without stress. Through interactive exercises, they learn how to identify rigid thought patterns and employ mindfulness to foster more flexible thinking, leading to more adaptive responses to workplace challenges.

Session 4: Mindfulness of Breath and Body

Focusing on mindfulness of breath and body, this session teaches participants to anchor themselves in the present moment through focused attention on breathing and bodily sensations. This practice helps reduce stress and anxiety, promoting a sense of calm and centeredness that is beneficial in managing work-related stress.

Session 5: Emotional Awareness and Regulation

Participants learn techniques for recognizing and regulating emotions through mindfulness. By becoming more aware of their emotional responses and understanding their transient nature, nurses can better manage emotional highs and lows, leading to improved emotional well-being and job satisfaction.

Session 6: Stress Management and Resilience Building

This session addresses stress management and resilience. Participants are taught mindfulness-based stress reduction (MBSR) techniques and cognitive strategies to enhance resilience. By cultivating a non-reactive stance towards stressors, nurses can maintain their well-being and remain effective in their roles.

Session 7: Enhancing Communication Skills through Mindfulness

Communication skills are crucial in nursing. This session uses mindfulness to enhance listening and speaking skills, fostering more effective and empathetic communication with colleagues and patients. By practicing mindful communication, participants can improve interpersonal relationships and reduce workplace conflicts.

Session 8: Problem-Solving and Decision Making

Focusing on problem-solving and decision-making, this session integrates mindfulness with cognitive strategies to enhance these essential skills. Nurses learn to approach problems with a clear, calm mind, enabling them to make more thoughtful and effective decisions in their work environment.

Session 9: Cultivating Compassion and Self-Care

Nurses often face emotional and physical exhaustion. This session emphasizes the importance of self-compassion and self-care through mindfulness practices. Participants

explore ways to integrate self-care routines into their daily lives, promoting well-being and preventing burnout.

Session 10: Applying Mindfulness and Cognitive Flexibility in the Workplace

Participants learn to apply the skills acquired throughout the program to their daily work routines. This session focuses on specific strategies for integrating mindfulness and cognitive flexibility into the nursing environment to enhance job satisfaction and improve patient care.

Session 11: Review and Future Application

The final session reviews key concepts and practices covered in the program. Participants share their experiences, discuss challenges and successes, and plan how to continue applying mindfulness and cognitive flexibility beyond the program. The session closes with a commitment to ongoing practice and growth.

2.4. Data analysis

For testing the research hypotheses, multivariate analysis of covariance and mixed-design ANOVA with repeated measures were used as appropriate. SPSS version 23 was used for data analysis.

3. Findings and Results

Descriptive statistics (mean and standard deviation) for job satisfaction scores in the group undergoing the mindfulness-based cognitive flexibility enhancement model and the control group at pre-test, post-test, and follow-up stages are presented in Table 1.

Table 1

Mean and Standard Deviation of Job Satisfaction Components by Assessment Stage in Groups

Group	Variable	Index	Pre-test	Post-test	Follow-up
Mindfulness-Based Cognitive Flexibility Enhancement Model	Supervisor Competencies	Mean	8.47	12.80	12.53
		Standard Deviation	2.50	2.27	1.77
Control	Supervisor Competencies	Mean	7.60	6.53	7.33
		Standard Deviation	1.35	2.36	2.53
Mindfulness-Based Cognitive Flexibility Enhancement Model	Working Conditions	Mean	8.47	13.27	12.67
		Standard Deviation	2.33	2.58	2.61
Control	Working Conditions	Mean	9.07	8.73	9.67
		Standard Deviation	2.55	3.69	3.74
Mindfulness-Based Cognitive Flexibility Enhancement Model	Rewards	Mean	10.00	12.13	12.07
		Standard Deviation	2.59	2.13	2.52
Control	Rewards	Mean	9.33	8.87	9.00
		Standard Deviation	2.32	3.54	2.93
Mindfulness-Based Cognitive Flexibility Enhancement Model	Job Variety	Mean	8.27	11.53	12.00
		Standard Deviation	2.40	1.77	1.51
Control	Job Variety	Mean	8.53	8.27	8.47
		Standard Deviation	1.68	1.49	1.25
Mindfulness-Based Cognitive Flexibility Enhancement Model	Job Responsibility	Mean	9.47	11.93	11.93
		Standard Deviation	2.70	2.05	2.22
Control	Job Responsibility	Mean	9.53	9.00	9.53
		Standard Deviation	1.77	2.45	2.45
Mindfulness-Based Cognitive Flexibility Enhancement Model	Advancement Opportunities	Mean	8.47	10.93	11.07
		Standard Deviation	2.70	1.94	1.58
Control	Advancement Opportunities	Mean	7.67	7.00	7.93
		Standard Deviation	2.19	3.18	3.86

As observed in Table 1, the mean subscale scores in the group undergoing the mindfulness-based cognitive flexibility enhancement model show a greater increase at the post-test stage compared to the pre-test.

Table 2

Mixed-Design ANOVA of Job Satisfaction Components with Greenhouse-Geisser Correction

Component	Factor	SS	df	MS	F	Sig	η²
Supervisor Competencies	Within-group	63.49	1.43	44.50	11.56	.001	.29
	Interaction (Test*Group)	122.69	1.43	86.00	22.33	.001	.44
	Between-group	380.28	1.00	380.28	43.87	.001	.61
Working Conditions	Within-group	107.76	1.13	95.63	19.50	.001	.41
	Interaction (Test*Group)	104.16	1.13	92.43	18.85	.001	.40
	Between-group	120.18	1.00	120.18	5.74	.02	.17
Rewards	Within-group	14.47	1.56	9.26	3.66	.04	.12
	Interaction (Test*Group)	31.40	1.56	20.09	7.94	.001	.22
	Between-group	122.50	1.00	122.50	6.77	.02	.20
Job Variety	Within-group	57.22	1.18	48.35	47.19	.001	.63
	Interaction (Test*Group)	67.49	1.18	57.02	55.65	.001	.67
	Between-group	106.71	1.00	106.71	13.89	.001	.33
Job Responsibility	Within-group	25.27	1.23	20.54	6.26	.01	.18
	Interaction (Test*Group)	38.42	1.23	31.23	9.52	.001	.25
	Between-group	69.34	1.00	69.34	5.92	.02	.17
Advancement Opportunities	Within-group	31.49	1.33	23.69	6.81	.01	.20
	Interaction (Test*Group)	39.76	1.33	29.91	8.60	.001	.24
	Between-group	154.71	1.00	154.71	9.05	.01	.24

The results of Table 2 indicate that the calculated F value for the within-group factor of stages (pre-test, post-test, and follow-up) is significant at the 0.05 level for job satisfaction components (P<0.05). Therefore, there is a significant difference between the mean scores of job satisfaction components at the three stages of pre-test, post-test, and follow-up. The Bonferroni post-hoc test was calculated to examine the differences between the means at the treatment stages, showing that there is a significant difference between job satisfaction components at the pre-test compared to the post-test, and pre-test compared to follow-up. Additionally, there is no significant difference between the job satisfaction scores at the post-test stage compared to the follow-up stage, indicating that the job satisfaction components did not significantly change from the post-test stage to the follow-up stage. According to the results of Table 2 regarding the interaction of stages and group factors, the calculated F value for the effect of stages (pre-test, post-test, and follow-up) between the two groups undergoing the mindfulness-based cognitive flexibility enhancement model and control is significant at the 0.05 level for job satisfaction components (P<0.05). Based on the results of Table 2 for the between-group factor, the calculated F value at the 0.05 level for job satisfaction components is significant (P<0.05). Therefore, there is a significant difference between the overall mean of job satisfaction components in the two groups undergoing the mindfulness-based cognitive flexibility enhancement model and control. In general, it can be concluded that the mindfulness-based cognitive flexibility enhancement model

has impacted job satisfaction components such that the experimental group (mindfulness-based cognitive flexibility enhancement model) has improved job satisfaction components compared to the control group. Given that the change in job satisfaction components from the pre-test to the follow-up stage was also significant, the improvement trend of job satisfaction components continued from the pre-test stage to the follow-up stage and was significantly different, indicating the sustainability of the training (mindfulness-based cognitive flexibility enhancement model) on job satisfaction components.

4. Discussion and Conclusion

The present study aimed to investigate the effectiveness of mindfulness-based cognitive flexibility training on nurses' job satisfaction. The results showed that the mindfulness-based cognitive flexibility training method had a significant effect on job satisfaction scores among nurses. Moreover, since the increase in job satisfaction scores in the follow-up stage compared to the pre-test was also significant, the trend of increasing job satisfaction scores continued from the pre-test stage to the follow-up stage and was significantly different, indicating the sustainability of the treatment (mindfulness-based cognitive flexibility training method) on job satisfaction scores. The research findings are consistent with prior findings (Argyriadis et al., 2023; Bolm et al., 2022; Di Mario et al., 2023; Hamidi & Shamloo, 2021). The findings are also noteworthy because the primary skills taught in the mindfulness-based cognitive flexibility

program—cognitive restructuring, relaxation, perceived controllability, problem-solving skills, stress management, confronting obstacles, self-care skills, and skills for acceptance and change—had a significant impact on increasing job satisfaction. By training the mindfulness-based cognitive flexibility program, nurses' job satisfaction can be enhanced as they learn skills such as listening attentively to others, adopting a conciliatory and peaceful approach to others, being sociable, respecting their own feelings and those of others, and empathy skills (which essentially involve connecting with others through understanding thoughts and feelings), leading to more successful personal and interpersonal relationships. Furthermore, when essential life skills such as self-awareness, effective communication, positive thinking, problem-solving, anger control, and compassion and forgiveness are enhanced, individuals gain the ability to learn the necessary communication and interaction methods for effective problem-solving in their interactions (Hamidi & Shamloo, 2021). A critical issue here is how nurses approach solving problems and injuries. If individuals can understand and empathize with the emotions of others and establish correct social relationships; they can then choose appropriate methods for solving their problems, thereby increasing their job satisfaction. When individuals' skills in life are enhanced based on mindfulness-based cognitive flexibility training programs, they will find correct strategies for solving their problems. For every problem that occurs in nurses' lives, there are many solutions, and individuals must know not to despair or feel weak in such situations but rather choose the best strategy by properly managing their behavior and understanding all aspects of the problem to plan for the continuation of their relationships. In this therapeutic method, therapists, by applying learning, cognitive, and educational principles, caused the development and strengthening of adaptive behavior in their jobs. Therapists teach nurses how to apply the principles of learning, cognitive development, and reinforcement of desirable behaviors. It seems that this treatment, by working on maladaptive behaviors and cognitions, leads to an improvement in the work environment, which in turn positively affects nurses' job satisfaction. Therefore, one of the reasons the mindfulness-based cognitive flexibility program was effective in job satisfaction among nurses could be that it led to the restructuring of unrealistic thoughts. Thus, it can be said that the mindfulness-based cognitive flexibility program, by resolving conflicts among nurses and improving interpersonal relationships through

teaching techniques such as problem-solving, interpersonal confrontation skills, stress confrontation skills, assertiveness training, cognitive restructuring techniques, positive thinking, communication skills, and empathy, has helped them to face problems appropriately, thereby increasing their job satisfaction.

These findings align with other studies that demonstrate the positive effects of mindfulness-based cognitive flexibility on mental health and job satisfaction of participants in training programs (Monroe et al., 2021; Sorice et al., 2023). The results of this study indicate that, compared to the control group, nurses participating in the training program show a significant increase in job satisfaction. These findings are consistent with various controlled and uncontrolled studies that have examined the effects of mindfulness-based cognitive flexibility training on increasing job satisfaction and quality of life among nurses (Montaner et al., 2021). It seems reasonable to infer that participants who attend mindfulness-based cognitive flexibility training sessions gain greater awareness of their automatic emotional triggers (antecedent-focused strategies), learning how to quickly disengage from stressful confrontations using new mindfulness techniques, such as labeling and observing (a response-focused strategy). The use of these types of emotion regulation strategies, focused on antecedents and responses, is likely a fundamental mechanism for explaining the effectiveness of mindfulness-based cognitive flexibility in increasing job satisfaction (Ghawadra et al., 2020; Lin et al., 2020). The second and most important mechanism likely explaining the increase in satisfaction associated with cognitive flexibility and mindfulness is probably related to the elicitation of positive self-regulatory attitudes. When participants learn to be aware of their mental processes, such as emotions, behaviors, and cognitive tendencies, they can avoid negative self-evaluation and being caught in ruminative desires (Puolakanaho et al., 2020). Wengtongkam et al. (2017) describe this process as a reactive response, where a fundamental shift in the individual's relationship with experiences occurs, and this process is assumed to play a helpful role in altering automatic processes and establishing conditioned interactions between thoughts, feelings, and behaviors (Wongtongkam et al., 2017).

Consequently, individuals are likely to practice forgiveness and compassion towards themselves and others. Research shows that individuals who participate in kindness and loving-kindness meditation show improvements in mental health and emotional balance (Thomas & Asselin,

2018). Mindfulness-based cognitive flexibility training enables individuals to become more accepting of others and accept others without prejudicial and negative judgments, encouraging them to be kinder and more sensitive to the needs of others. In fact, by increasing individuals' capacity for self-awareness, empathetic concerns, and emotional regulation, mindfulness sets the stage for enhancing job satisfaction among nurses.

In conclusion, the findings of this study on the effectiveness of the mindfulness-based cognitive flexibility program on nurses' job satisfaction are in line with previous findings. It can be concluded that improving life skills and specifically positive strategies with cognitive assessment of emotions leads to an increase in positive feelings, adaptive behavior, and well-being; therefore, they reduce negative emotions, especially in life situations, which subsequently increases job satisfaction. After training in the mindfulness-based cognitive flexibility program, individuals learn skills such as thinking before reacting and delaying destructive and immediate reactions to others' threats, and they can control the expression of emotions in various situations. They also learn to react constructively and correctly instead of impulsively and without inflicting physical and psychological harm on themselves or others. For this reason, it seems that the mindfulness-based cognitive flexibility program is suitable for increasing job satisfaction among nurses.

5. Limitations & Suggestions

This study, while providing valuable insights into the effectiveness of mindfulness-based cognitive flexibility training on nurses' job satisfaction, has several limitations that warrant mention. Firstly, the quasi-experimental design and the non-randomized sampling limit the generalizability of the findings. The reliance on self-reported measures for job satisfaction could introduce bias, as participants might respond in socially desirable ways. Furthermore, the study focused solely on nurses from hospitals in a specific geographic area, which may not represent the experiences of nurses in different regions or healthcare settings. Lastly, the intervention's duration and the follow-up period were relatively short, limiting the ability to assess long-term effects.

Future research should aim to overcome the limitations of the current study by employing a randomized controlled trial design to enhance the generalizability of the findings. Expanding the sample size and including nurses from a variety of healthcare settings and geographical locations could provide a more comprehensive understanding of the intervention's effectiveness. Longitudinal studies with extended follow-up periods are necessary to assess the long-term impacts of mindfulness-based cognitive flexibility training on job satisfaction and other relevant outcomes. Additionally, incorporating objective measures of job performance and satisfaction, alongside self-reported measures, could provide a more nuanced understanding of the intervention's effects.

The findings of this study suggest several practical implications for healthcare administrators and nursing managers. Implementing mindfulness-based cognitive flexibility training programs in hospitals and healthcare settings can be a cost-effective strategy to enhance job satisfaction among nurses, potentially leading to improved patient care and reduced staff turnover. Such programs could be integrated into existing professional development and wellness initiatives, emphasizing the development of coping mechanisms for stress and fostering a positive work environment. Additionally, policy-makers and healthcare leaders should consider incorporating mindfulness and cognitive flexibility training into nursing education curricula to equip future nurses with the skills needed to manage the complexities and stressors inherent in the healthcare profession.

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 contributed in this article.

References

Afulani, P. A., Gyamerah, A. O., Nutor, J. J., Laar, A., Aborigo, R. A., Malechi, H., Sterling, M., & Awoonor-Williams, J. K. (2021). Inadequate preparedness for response to COVID-19 is associated with stress and burnout among healthcare workers in Ghana. *PLoS One*, *16*(4), e0250294. https://doi.org/10.1371/journal.pone.0250294

Alameddine, M., Bou-Karroum, K., Ghalayini, W., & Abiad, F. (2021). Resilience of nurses at the epicenter of the COVID-19 pandemic in Lebanon. *International journal of nursing sciences*, *8*(4), 432-438. https://doi.org/10.1016/j.ijnss.2021.08.002

Argyriadis, A., Ioannidou, L., Dimitrakopoulos, I., Gourni, M., Ntimeri, G., Vlachou, C., & Argyriadi, A. (2023). Experimental Mindfulness Intervention in an Emergency Department for Stress Management and Development of Positive Working Environment. *Healthcare*, *11*(6), 879. https://doi.org/10.3390/healthcare11060879

Bayer, N., Golbasi, Z., Uzuntarla, Y., & Akarsu, K. (2021). Job satisfaction, burnout and turnover intention of nurses working in hospital during the pandemic COVID-19 in Turkey. *Journal of Clinical Medicine of Kazakhstan*, *18*(6), 69-75. https://doi.org/10.23950/jcmk/11347

Bennike, I. H., Wieghorst, A., & Kirk, U. (2017). Online-based Mindfulness Training Reduces Behavioral Markers of Mind Wandering. *Journal of Cognitive Enhancement*, *1*(2), 172-181. https://doi.org/10.1007/s41465-017-0020-9

Berlin, G., Lapointe, M., & Murphy, M. (2022). Surveyed nurses consider leaving direct patient care at elevated rates. *McKinsey & Company*. https://www.emergingrnleader.com/wp-content/uploads/2022/02/Mckinsey-Report-2022.pdf

Bolm, S. L., Zwaal, W., & Fernandes, M. B. (2022). Effects of mindfulness on occupational stress and job satisfaction of hospitality and service workers. *Research in Hospitality Management*, *12*(1), 61-70. https://doi.org/10.1080/22243534.2022.2080954

Buheji, M., & Buhaid, N. (2020). Nursing human factor during COVID-19 pandemic. *Int J Nurs Sci*, *10*(1), 12-24. https://doi.org/10.5923/j.nursing.20201001.02

Carpenter, J. K., Sanford, J., & Hofmann, S. G. (2019). The Effect of a Brief Mindfulness Training on Distress Tolerance and Stress Reactivity. *Behavior therapy*, *50*(3), 630-645. https://doi.org/10.1016/j.beth.2018.10.003

Di Mario, S., Cocchiara, R. A., & Torre, G. L. (2023). The Use of Yoga and Mindfulness-based Interventions to Reduce Stress and Burnout in Healthcare Workers: An Umbrella Review. *Alternative Therapies in Health & Medicine*, *29*(1). https://search.ebscohost.com/login.aspx?direct=true&profile=ehost&scope=site&authtype=crawler&jrnl=10786791&AN=161350423&h=gYWCsp1ml%2BHXMyNt8Il3Ok3geDjnkmhDQSDykJBkSlfpo%2FOSM%2Fz4c7TQ1uJXTguQHoGl5HVIKDUA0dCbnJqYSA%3D%3D&crl=c

Ghawadra, S. F., Lim Abdullah, K., Choo, W. Y., Danaee, M., & Phang, C. K. (2020). The effect of mindfulness-based training on stress, anxiety, depression and job satisfaction among ward nurses: A randomized control trial. *Journal of nursing management*, *28*(5), 1088-1097. https://doi.org/10.1111/jonm.13049

Giménez-Espert, M. d. C., Prado-Gascó, V., & Soto-Rubio, A. (2020). Psychosocial Risks, Work Engagement, and Job Satisfaction of Nurses During COVID-19 Pandemic [Original Research]. *Frontiers in Public Health*, *8*. https://doi.org/10.3389/fpubh.2020.566896

Hamidi, F., & Shamloo, M. (2021). Effectiveness of Mindfulness Based on Stress Reduction on Teacher's Job Stress and Job Burnout. *Research in Teacher Education(RTE)*, *4*(1), -. https://te-research.cfu.ac.ir/article_1438_0c3833412668e7ef1120c6d9626122c9.pdf

Harris, R. (2024). *La trappola della felicità: come smettere di tormentarsi e iniziare a vivere*. Edizioni Centro Studi Erickson. https://books.google.com/books?hl=en&lr=&id=2hD0EAAAQBAJ&oi=fnd&pg=PT13&dq=15.+Harris,+R.+(2019).+La+trappola+della+felicit%C3%A0.+Come+smettere+di+tormentarsi+e+iniziare+a+vivere.+Edizioni+Centro+Studi+Erickson.%E2%80%8F&ots=ikGGR8xQAb&sig=u7Y9MJ8AOMHpzVqTvX-Zhh-cz8A

Hofmann, S. G., & Gómez, A. F. (2017). Mindfulness-Based Interventions for Anxiety and Depression. *Psychiatric Clinics of North America*, *40*(4), 739-749. https://doi.org/10.1016/j.psc.2017.08.008

Iskandarsyah, A., Shabrina, A., Djunaidi, A., & Siswadi, A. G. P. (2021). Mental health, work satisfaction and, quality of life among healthcare professionals during the COVID-19 pandemic in an Indonesian sample. *Psychology research and behavior management*, 1437-1446. https://doi.org/10.2147/PRBM.S330676

Joshua, R., Chehab, F., David, R., & Salim, N. (2021). Impact of work stress during COVID-19 epidemic on job satisfaction and job performance among nurses in critical care units, United Arab Emirates 2020. *International Journal of Clinical and Experimental Medicine Research*, *5*(2), 225-231. https://doi.org/10.26855/ijcemr.2021.04.018

Labrague, L. J. (2021). Pandemic fatigue and clinical nurses' mental health, sleep quality and job contentment during the covid-19 pandemic: The mediating role of resilience. *Journal of nursing management*, *29*(7), 1992-2001. https://doi.org/10.1111/jonm.13383

Labrague, L. J., & de los Santos, J. A. A. (2021). Resilience as a mediator between compassion fatigue, nurses' work outcomes, and quality of care during the COVID-19 pandemic. *Applied Nursing Research*, *61*, 151476. https://doi.org/10.1016/j.apnr.2021.151476

Lavoie-Tremblay, M., Gélinas, C., Aubé, T., Tchouaket, E., Tremblay, D., Gagnon, M. P., & Côté, J. (2022). Influence of caring for COVID-19 patients on nurse's turnover, work satisfaction and quality of care. *Journal of nursing management*, *30*(1), 33-43. https://onlinelibrary.wiley.com/doi/abs/10.1111/jonm.13462

Ledda, C., Cicciù, F., Puglisi, B., Ramaci, T., Nunnari, G., & Rapisarda, V. (2017). Attitude of Health Care Workers (HCWs) toward Patients Affected by HIV/AIDS and Drug Users: A Cross-Sectional Study. *International journal of environmental research and public health*, *14*(3), 284. https://doi.org/10.3390/ijerph14030284

Lin, L., Liu, X., & He, G. (2020). Mindfulness and Job Satisfaction Among Hospital Nurses: The Mediating Roles of Positive Affect and Resilience. *Journal of Psychosocial Nursing and Mental Health Services*, *58*(6), 46-55. https://doi.org/10.3928/02793695-20200406-03

Lindsay, E. K., & Creswell, J. D. (2017). Mechanisms of mindfulness training: Monitor and Acceptance Theory (MAT). *Clinical psychology review*, *51*, 48-59. https://doi.org/10.1016/j.cpr.2016.10.011

Llego, J. H., & Pangket, P. P. (2021). Moral Distress Work Motivation and Job Satisfaction of Medical-Surgical Nurses During the COVID-19 Pandemic: A Correlation Study. *Texila International Journal of Nursing*, *7*(2), 27-33. https://www.academia.edu/download/106084505/Nursing_Vol7_Issue2_Article_4.pdf

Macías, J., Valero-Aguayo, L., Bond, F. W., & Blanca, M. J. (2019). The efficacy of functional-analytic psychotherapy and acceptance and commitment therapy (FACT) for public employees. *Psicothema*, *31*(1), 24-29. https://research.gold.ac.uk/id/eprint/27507/

McConville, J., McAleer, R., & Hahne, A. (2017). Mindfulness Training for Health Profession Students—The Effect of Mindfulness Training on Psychological Well-Being, Learning and Clinical Performance of Health Professional Students: A Systematic Review of Randomized and Non-randomized Controlled Trials. *EXPLORE*, *13*(1), 26-45. https://doi.org/10.1016/j.explore.2016.10.002

Monroe, C., Loresto, F., Horton-Deutsch, S., Kleiner, C., Eron, K., Varney, R., & Grimm, S. (2021). The value of intentional self-care practices: The effects of mindfulness on improving job satisfaction, teamwork, and workplace environments. *Archives of Psychiatric Nursing*, *35*(2), 189-194. https://doi.org/10.1016/j.apnu.2020.10.003

Montaner, X., Tárrega, S., & Moix, J. (2021). Psychological flexibility, burnout and job satisfaction in dementia care workers. *Revista espanola de geriatria y gerontologia*, *56*(3), 144-151. https://europepmc.org/article/med/33608164

Parsakia, K., Namjoo, K., Arjmand, M., Sabzvand, A., Rahyan, H., Fazli, A., & Jamshidi, M. (2022). The mediating role of work engagement in the relationship between psychological climate and productivity and job satisfaction in teachers. *International Journal of Innovation Management and Organizational Behavior (IJIMOB)*, *2*(2), 8-23. https://doi.org/10.61838/kman.ijimob.2.2.2

Petter, M., McGrath, P. J., Chambers, C. T., & Dick, B. D. (2014). The Effects of Mindful Attention and State Mindfulness on Acute Experimental Pain Among Adolescents. *Journal of Pediatric Psychology*, *39*(5), 521-531. https://doi.org/10.1093/jpepsy/jsu007

Puolakanaho, A., Tolvanen, A., Kinnunen, S. M., & Lappalainen, R. (2020). A psychological flexibility -based intervention for Burnout:A randomized controlled trial. *Journal of Contextual Behavioral Science*, *15*, 52-67. https://doi.org/10.1016/j.jcbs.2019.11.007

Ramaci, T., Bellini, D., Presti, G., & Santisi, G. (2019). Psychological Flexibility and Mindfulness as Predictors of Individual Outcomes in Hospital Health Workers [Original Research]. *Frontiers in psychology*, *10*. https://doi.org/10.3389/fpsyg.2019.01302

Ramaci, T., Pellerone, M., Ledda, C., & Rapisarda, V. (2017). Health promotion, psychological distress, and disease prevention in the workplace: a cross-sectional study of Italian adults. *Risk Management and Healthcare Policy*, 167-175. https://www.tandfonline.com/doi/abs/10.2147/RMHP.S139756

Savitsky, B., Radomislensky, I., & Hendel, T. (2021). Nurses' occupational satisfaction during Covid-19 pandemic. *Applied Nursing Research*, *59*, 151416. https://doi.org/10.1016/j.apnr.2021.151416

Senek, M., Robertson, S., Ryan, T., King, R., Wood, E., Taylor, B., & Tod, A. (2020). Determinants of nurse job dissatisfaction - findings from a cross-sectional survey analysis in the UK. *BMC Nursing*, *19*(1), 88. https://doi.org/10.1186/s12912-020-00481-3

Slutsky, J., Chin, B., Raye, J., & Creswell, J. D. (2019). Mindfulness training improves employee well-being: A randomized controlled trial. *Journal of occupational health psychology*, *24*(1), 139-149. https://doi.org/10.1037/ocp0000132

Sorice, E., Rocha, R. M. d., Villari, C. A., Alencar, J. C. G. d., & Souza, H. P. d. (2023). Efeitos de técnicas de mindfulness e meditação na saúde mental de profissionais de saúde no departamento de emergência: uma revisão sistemática. *Revista de Medicina*, *102*(1), e-199975. https://doi.org/10.11606/issn.1679-9836.v102i1e-199975

Tajuddin, D., & Ambad, S. N. A. (2021). The relationship between job satisfaction and turnover intention among nurses in federal territory of Labuan: Coworker support as a moderator. *Journal of Management Info*, *8*(2), 105-119. https://readersinsight.net/jmi/article/download/2000/1366

Tang, Y.-Y., Tang, R., & Gross, J. J. (2019). Promoting Psychological Well-Being Through an Evidence-Based Mindfulness Training Program [Perspective]. *Frontiers in human neuroscience*, *13*. https://doi.org/10.3389/fnhum.2019.00237

Thomas, L. J., & Asselin, M. (2018). Promoting resilience among nursing students in clinical education. *Nurse Education in Practice*, *28*, 231-234. https://doi.org/10.1016/j.nepr.2017.10.001

Wijaya, I. W. S., & Martini, I. A. O. (2020). Important Indicators in Increasing Nurse Loyalty in The Covid-19 Pandemic Time. *STRADA Jurnal Ilmiah Kesehatan*, *9*(2), 1763-1770. https://sjik.org/index.php/sjik/article/view/531

Wongtongkam, N., Krivokapic-Skoko, B., Duncan, R., & Bellio, M. (2017). The influence of a mindfulness-based intervention on job satisfaction and work-related stress and anxiety. *International Journal of Mental Health Promotion*, *19*(3), 134-143. https://www.tandfonline.com/doi/abs/10.1080/14623730.2017.1316760

Yu, X., Zhao, Y., Li, Y., Hu, C., Xu, H., Zhao, X., & Huang, J. (2020). Factors Associated With Job Satisfaction of Frontline Medical Staff Fighting Against COVID-19: A Cross-Sectional Study in China [Original Research]. *Frontiers in Public Health*, *8*. https://doi.org/10.3389/fpubh.2020.00426

Zaghini, F., Fiorini, J., Livigni, L., Carrabs, G., & Sili, A. (2021). A mixed methods study of an organization's approach to the COVID-19 health care crisis. *Nursing Outlook*, *69*(5), 793-804. https://www.sciencedirect.com/science/article/pii/S0029655421001354