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Research Article

The Effectiveness of Mindfulness Practices in Alleviating Stress Among Emergency Care Nurses

Eka Nurjanah[1] | Estin Yuliastuti[2]* | Suyatno Suyatno[3]

[1,2,3]Department of Nursing, Faculty of Health Sciences, Institut Teknologi Sains dan Kesehatan PKU Muhammadiyah Surakarta, Surakarta City, Indonesia

***contact**

estin.yuli@gmail.com

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Abstract

Aims: All hospital staff were at risk of experiencing stress, but nurses often faced higher levels of stress, especially in the emergency department. If the stress experienced by nurses was not addressed promptly, it could lead to psychosocial issues and negatively impact their performance. This study evaluated the effectiveness of a 15-minute mindfulness intervention in reducing stress among nurses in the emergency department.
Method: This study was a quasi-experimental with a one group pretest-posttest design, conducted from December 15 to 17, 2023, in an emergency department at a hospital in Sragen. A total of 15 respondents were selected using total sampling. This study only utilized 14 items to measure stress of the DASS (Depression Anxiety Stress Scale) before and after the Mindfulness intervention, which was conducted in a group setting for 15 minutes. Data were analyzed using the Wilcoxon Rank Test.
Results: The analysis showed a p-value of 0.000 ($p<0.05$).
Conclusion: Mindfulness practices significantly impacted the stress levels of nurses in the emergency department. This study supports the integration of mindfulness practices in stress management programs for emergency department nurses.

Keywords:
Effectiveness, Emergency Department, Mindfulness, Nurses, Stress

INTRODUCTION

Nurses played a crucial role in the healthcare system within hospitals. They were responsible for caring for patients to expedite the healing process, which required optimal physical condition and sufficient energy due to the dynamic nature of their work. This responsibility was significant, as nurses not only handled medical aspects but also had to maintain their mental and physical well-being. The various challenges nurses faced in fulfilling their duties created pressure that potentially led to workplace stress, particularly in the Emergency Department (ED) (1).

The ED served as a 24-hour gateway to healthcare services and required rapid and efficient responses. The high volume of patients that needed to be attended to often exceeded the number of available nurses, adding further pressure. Additionally, frequent conflicts and poor communication between nurses and doctors exacerbated stress conditions (2).

All hospital workers were at risk of experiencing stress, but nurses often faced higher levels of stress (3). If occupational

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stress was not addressed promptly, it could persist and lead to depression, which in turn affected nurses' performance. Stress resulted in poor decision-making, decreased concentration, fatigue, and even accidents that negatively impacted the quality of care provided, ultimately leading to decreased productivity (4).

Stress was defined as a physical and psychological reaction to specific demands, which could create tension and disrupt life stability (5). Over the long term, stress could become chronic and have negative consequences, especially for healthcare workers, who frequently experienced physical symptoms such as sleep disturbances, reduced appetite, fatigue, and emotional changes. Cognitive symptoms like lack of concentration and apathy towards the environment also emerged (6). The level of stress experienced varied based on internal and external factors, and healthcare workers often experienced burnout due to high job demands (7).

Work-related stress among nurses is a growing global issue that has gained widespread attention from various stakeholders, at global, national, and local levels. Globally, stress experienced by healthcare workers, particularly nurses, has been identified as a significant risk factor for their physical and mental health. The World Health Organization (WHO) reports that nurses often face higher levels of stress compared to other professions, which can contribute to long-term health issues such as burnout and psychosocial problems (8). A report by the American Nurses Foundation (2021) indicated that more than 34% of nurses assessed their emotional health as unhealthy, with 75% reporting feelings of stress, and 46% of emergency department nurses experiencing emotional issues. More than 8,000 nurses were reluctant to continue their profession, and occupational stress among nurses was a significant global issue, with prevalence rates ranging from 9.2% to 68% (9).

Nationally, according to a survey by the National Nurses Association (PPNI) reported that approximately 50.9% of nurses in Indonesia experienced occupational stress. Many nurses in Indonesia experience high levels of stress due to staff shortages, long working hours, and high expectations from patients and their families. Research also indicates that stress experienced by nurses in Indonesia is directly related to a decline in the quality of healthcare services (10).

The situation of stress is similarly concerning at the local level. At a hospital in Central Java, for example, nurses in the emergency department face unique challenges that impact their well-being. According to research by Dewi, emergency department nurses often experience stress caused by unpredictable work conditions, pressure from patients' families, and the need to make rapid decisions in emergency situations. Unmanaged stress can lead to decreased performance and well-being, which in turn affects the overall quality of healthcare delivery (11).

The consequences of unaddressed stress could be severe, affecting nurses' ability to remember and perform tasks, as well as increasing the risk of errors that could harm patients and organizations. Nurses' duties often exceeded what was designated, creating heavy workloads (2).

Literature indicated that stress among nurses, particularly in the ED, required attention. By understanding the global, national, and local contexts of stress among nurses, it is crucial to identify interventions that can reduce stress levels. Various techniques, including music therapy, guided relaxation, and Mindfulness Therapy, had been proposed as methods to cope with stress (12).

One promising approach is mindfulness practices. Mindfulness Therapy focused on managing thoughts and feelings in the present moment, helping individuals to concentrate and address issues. This approach was easy to implement in daily

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life and did not incur costs (13). Previous research by Galante revealed that mindfulness can significantly reduce stress levels in nurses and improve their mental well-being. Mindfulness Therapy was effective in reducing stress, with significant differences between intervention and control groups. This indicated that Mindfulness Therapy had a positive impact on stress levels (14).

Although stress among healthcare workers, including nurses, is well-documented globally, there is a lack of targeted interventions for emergency care nurses in Indonesia. While global studies have shown the effectiveness of mindfulness interventions in reducing stress (14), study specifically focusing on emergency department (ED) nurses and providing interventions is scarce. Most studies in Indonesia have focused on descriptive or correlational studies, with little attention given to the unique challenges faced by ED nurses, who work in high-pressure, fast-paced environments (15). This is particularly significant given the critical role of emergency care nurses and the high levels of stress they experience. There is a pressing need for evidence-based interventions, such as mindfulness, to be explored and implemented in Indonesian emergency care settings.

In addition, through interviews, it was revealed that nurses at the study site sometimes felt stressed and had not received stress management interventions from the hospital. Thus, this study aims to evaluate the effectiveness of a 15-minute mindfulness intervention in reducing stress levels among nurses in the emergency department, with the hope of contributing to better stress management in their work environment.

METHODS

Study Design

This study utilized a quasi-experimental method with a one-group pretest-posttest design. The research was conducted from December 15 to 17, 2023, at an emergency department in a hospital in Sragen.

Sample

The population in this study consisted of all nurses in the emergency department. The sampling technique employed was total sampling, with a total of 15 respondents.

The small sample size (n=15) in this study presents a limitation, which could affect the generalizability and statistical power of the findings. The study was conducted in a high-pressure environment, such as an emergency department, where recruitment and participation can be difficult due to time constraints and the busy nature of healthcare work. This makes it challenging to recruit a larger sample. Studies involving healthcare professionals, especially in emergency settings, often face logistical and scheduling challenges that limit sample size. Despite the small sample size, the study provides valuable preliminary data on the effectiveness of a brief mindfulness intervention. Previous study has shown that even short interventions with small samples can provide meaningful insights, particularly when evaluating initial effectiveness and acceptability (16,17).

Instruments

The DASS questionnaire developed by Lovibond & Lovibond in 1995. This questionnaire consisted of 42 items that evaluated anxiety, depression, and stress. Response options ranged from 0 (not at all characteristic of me or never) to 3 (very characteristic of me or very often). This study only utilized 14 items to measure stress, with a total score ranging from a minimum of 0 to a maximum of 42. The validity of the instrument for these 14 items showed a value greater than 0.532, while the reliability had a Cronbach's alpha of 0.951 (18).

The Mindfulness program start by setting your intention for peace or growth, then engage in self-reflection to assess and improve yourself. Practice repentance to cleanse your heart, followed by embracing contentment and accepting

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things as they are. Strengthen your spirit with prayer, then perform a body scan to release physical tension. Next, engage in detoxification to clear both mind and body of negativity, followed by relaxation techniques like deep breathing. Finally, practice tawakkal, trusting that everything will unfold as it should, and let go of worry, finding peace within.

Data Collection

The variables examined included mindfulness (independent) and stress (dependent). The mindfulness intervention was conducted once for 15 minutes in a group setting. Stress was measured before and after the intervention was provided.

Short mindfulness interventions, including those lasting 10-15 minutes, have been shown to significantly reduce stress and improve mental health. A more recent study by Palmer found that there is no significant difference between mindfulness practiced for 10 minutes and 20 minutes (19). Despite the heterogeneity of outcomes across studies, there is evidence that brief Mindfulness-Based Interventions (MBIs) can impact various health-related outcomes, even after just one session and with interventions as brief as 5 minutes. These interventions have the potential to serve as initial steps leading to sustainable and positive health outcomes (20).

Data Analysis

Data analysis was performed using the Wilcoxon rank test. In this study, ethical considerations were addressed through informed consent and participant confidentiality. Participants were fully informed about the study's purpose, procedures, potential risks, and benefits, ensuring that their participation was voluntary and that they could withdraw at any time without consequences. Written informed consent was obtained from each participant, and their personal information remained confidential. Data were anonymized and securely stored, with access restricted to authorized researchers only. Results were reported in aggregate form to protect privacy. The study also underwent ethical review and received ethical approval by The Ethics Committee of Institut Teknologi Sains dan Kesehatan PKU Muhammadiyah Surakarta with the number 527/LPPM/ITS.PKU/XII/2023.

RESULTS

Demographic characteristics of respondents

The number of respondents in this study was 15 nurses, with demographic characteristics including age, gender, and level of education.

Table 1. Distribution of respondents' demographic characteristics by age (n=15)

Characteristic	Mean	SD	Min-Max
Age	30.07	6.08	23-42

Table 1 showed that the average age of the respondents was 30 years, with the youngest and oldest respondents being 23 years and 42 years old.

Table 2. Distribution of respondents' demographic characteristics by gender and education level (n=15)

Characteristics	Frequency (f)	Percentage (%)
Gender		
Female	9	60
Male	6	40
Education level		
Diploma	12	80
Bachelor	3	20

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Table 2 indicated that the analysis results revealed that the majority of respondents were female (60%) and held a diploma (80%).

The effect of mindfulness therapy on respondents' stress

Below was a table that showed the effectiveness of mindfulness on stress among nurses in the emergency department.

Table 3. Distribution of stress levels before and after mindfulness intervention and its effectiveness in reducing stress among nurses in the emergency department (n=15)

Stress level	*Pre-test*		*Post-test*		*p-value*
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)	
Normal	0	0	6	40	0.000
Mild	6	40	9	60	
Moderate	9	60	0	0	
Severe	0	0	0	0	
Extremely severe	0	0	0	0	

Table 3 demonstrated that the majority of nurses' stress levels before the mindfulness intervention were categorized as moderate (60%), while after the intervention, the majority of nurses' stress levels were categorized as mild (60%). The p-value was 0.000 ($p<0.05$), leading to the conclusion that the alternative hypothesis (Ha) was accepted and the null hypothesis (H0) was rejected, indicating that mindfulness was effective in reducing stress among nurses in the emergency department.

DISCUSSION

Demographic characteristics of respondents

All respondents in this study were in the adult phase of life. At this stage, individuals are generally better equipped to manage stress compared to childhood or old age. As individuals age, they tend to show greater emotional maturity, including wisdom, rational thinking abilities, emotional regulation, and tolerance for differences. Irkhami's research reported a negative relationship between age and work stress; as a person's age increases, their level of stress tends to decrease, while younger individuals are more likely to experience higher levels of stress (21).

Every individual is at risk of experiencing stress when faced with situations perceived as threatening. However, repeated exposure to the same stressors can lead individuals to view them as routine (22). Overall, as age increases, stress levels tend to decrease. This is due to greater experience in dealing with various stressors, the ability to utilize support resources, and skills in coping mechanisms. Thus, as individuals age, they become better at managing stress, which contributes to a reduction in stress levels even when faced with the same pressures (23).

The majority of respondents in this study were female. Awalia, Medyati, and Giay found a significant relationship between gender and work stress in their research (24). The psychological development of women differs from that of men; women tend to consider various aspects of their actions more thoroughly, while men typically do not focus as much on details, which can lead women to experience higher levels of stress (25).

Women are more vulnerable to anxiety, feelings of guilt, sleep disturbances, and eating disorders compared to men, even

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when experiencing similar levels of stress. Gender influences the experience of stress, with differing responses between men and women when facing conflict. Women's brains are generally more sensitive to conflict and stress, which can trigger the release of negative hormones, resulting in stress, anxiety, and fear. In contrast, men usually enjoy conflict and competition more and often view it as a positive opportunity. From this, it can be concluded that women are more likely to experience stress when confronted with pressure (23).

Most of the respondents in this study had a diploma-level education. Previous research by Irkham indicated that higher levels of education correlate with lower levels of stress; conversely, individuals with lower educational attainment tend to experience higher levels of stress (21). Education is considered a resource that can directly reduce the stress experienced in the workplace and can also mitigate the effects of stress-inducing factors. The positive impact of education is related to coping strategies that help employees manage or maintain their ability to cope with stress. This means that education provides better tools or approaches for dealing with stressors. Education can enhance the utilization of information, which, in turn, can lead to healthier behaviors and improved coping with stress (26).

The effect of mindfulness therapy on respondents' stress

The findings of this study indicated that there was an influence of mindfulness therapy on stress among nurses in the ED. The results of the research by Handayani, Dwidiyanti, and Mu'in revealed that mindfulness therapy was effective in reducing stress, with a significant difference between the intervention and control groups (27). In line with these findings, a study by Yuliana, Safitri, and Ardiyanti found a significant difference between pre-test and post-test scores in the experimental group, indicating that the application of mindfulness had a positive impact on stress levels (28).

Mindfulness therapy offers various benefits, including improved health, reduced stress, anxiety, and depression, as well as enhanced outlook on life. Additionally, this therapy can improve interpersonal relationships, self-confidence, awareness, cognitive function, and reduce cognitive distortions while increasing physical resilience and lowering the risk of substance abuse (29).

Stress is understood as a physical and psychological response to demands, which can lead to tension and disrupt life stability (5). Prolonged stress can have negative effects and can become chronic, with healthcare workers often experiencing physical symptoms such as irregular sleep, loss of appetite, headaches, fatigue, and irritability. Increased secretion of stress hormones may enable individuals to engage in more intense physical activity compared to those who do not experience stress. Long-term stress can disrupt brain function, the autonomic nervous system, the endocrine system, and the immune system, potentially leading to various psychosomatic diseases (30).

Mindfulness has been shown to effectively reduce stress through both psychological and physiological mechanisms, making it especially valuable in high-stress environments like emergency departments. Psychologically, mindfulness encourages non-judgmental awareness of the present moment, which helps individuals better manage their emotional responses and reduce reactivity to stressors. This leads to a decrease in rumination and negative thought patterns, ultimately reducing stress and enhancing emotional regulation (31).

Physiologically, mindfulness practice has been linked to reductions in markers of stress such as cortisol, heart rate, and blood pressure. Mindfulness activates the parasympathetic nervous system, helping to counterbalance the fight-or-flight response and induce relaxation. This physiological shift contributes to lower stress levels and

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improved overall well-being. Mindfulness also enhances brain regions responsible for emotional regulation, such as the prefrontal cortex, making it easier for individuals to manage stress effectively (32).

Mindfulness therapy is designed to achieve a relaxed state by reducing sympathetic nervous system activity, through self-assurance in addressing stress-triggering problems. Mindfulness interventions work by achieving alpha brain wave states, contributing to increased secretion of norepinephrine, serotonin, and beta-endorphins, while decreasing blood production. The reduction in blood production is directly related to stress, and a decrease in stress levels is followed by an improvement in immune response. Thus, mindfulness therapy can prevent psychosomatic disorders, as individuals practicing it will feel more relaxed (33).

Recent studies support the efficacy of mindfulness, even with brief interventions. For example, several findings showed that brief mindfulness-based interventions (ranging from 10 to 20 minutes) significantly reduced stress, anxiety, and depression in healthcare workers (19,20,34). Similarly, previous meta-analysis studies revealed that mindfulness-based interventions were effective in reducing stress and improving mental health outcomes, particularly in high-stress occupations like healthcare. These findings underline the growing body of evidence supporting mindfulness as a reliable method for stress reduction (35–37).

The intervention in this study utilized mindfulness therapy to manage stress, helping individuals face their thoughts and feelings in the present moment. The STOP technique (Stop, Take a breath, Observe, Proceed) was used as a mindfulness exercise. Simple steps such as creating space and time, choosing a comfortable sitting position, paying attention to posture, and focusing on breathing can be integrated into daily life. Furthermore, this practice involves Allah SWT as the Almighty in every stage of therapy (by remembering Allah SWT), aiming to help individuals realize that their conditions or experiences are not mere coincidences, but events determined by Allah SWT (33).

The effectiveness of mindfulness in reducing stress could be achieved through techniques adapted to local cultural contexts, such as the concept of “eling” in Javanese culture, which emphasized self-awareness. The Javanese concept of **"eling"**, which translates to "awareness" or "mindfulness," aligns closely with modern mindfulness practices, making it a culturally relevant framework for integrating mindfulness into daily life. **Eling** emphasizes being present and fully aware of one’s thoughts, actions, and surroundings, akin to the non-judgmental awareness central to mindfulness practices (33). This form of awareness is deeply rooted in Javanese culture, encouraging individuals to stay grounded and focused on the present moment, thus reducing the tendency to ruminate on the past or worry about the future. These elements mirror the core principles of mindfulness, which promotes mental clarity and emotional balance (38).

By integrating eling into mindfulness interventions for healthcare workers, especially in Javanese communities, hospitals can make mindfulness practices more culturally resonant. This integration would likely improve participation and engagement by framing mindfulness in a culturally familiar context, thus making it more accessible and meaningful to the workforce. Hospitals could offer training sessions where eling is framed as the foundation for mindfulness, helping healthcare workers relate their cultural values to modern well-being practices (39).

Hospitals can integrate mindfulness into staff wellness programs by offering brief, regular mindfulness sessions during breaks or shift changes, either in person or through digital platforms. Training for staff at all levels can normalize mindfulness practices,

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with specific programs tailored to high-stress roles like emergency department and ICU staff. Incorporating mindfulness into leadership training can further support a culture of well-being. Regular evaluations through stress surveys and feedback can help fine-tune these programs, ensuring they effectively reduce burnout, enhance emotional resilience, and improve job satisfaction, ultimately leading to better patient care and lower turnover rates.

This study has several limitations. First, potential biases such as group dynamics during the intervention and self-reporting bias could have influenced participants' responses. Social pressure in group settings or exaggeration of improvements due to social desirability may have skewed results. Future studies should include individual sessions and use objective measures like cortisol levels to reduce these biases. Additionally, the small sample size (n=15) and single-site design limit the generalizability of the findings. Larger, multi-site studies with more diverse samples are needed for broader applicability. Future research should also explore longitudinal studies to assess long-term effects and compare mindfulness with other stress management techniques to identify the most effective interventions for healthcare workers.

CONCLUSION

This study suggested that mindfulness interventions effectively reduced stress among healthcare workers, particularly emergency department nurses. Hospital administrators and policymakers should integrate mindfulness training into staff development programs, offering regular sessions and focusing on high-stress roles. Future research should involve larger, multicentre trials to validate these findings and explore long-term effects. Additionally, comparative studies are needed to assess mindfulness against other stress management techniques. To ensure up-to-date evidence, future studies should include recent references from the last five years, focusing solely on mindfulness and stress management in healthcare settings.

Conflict of Interest
Authors declare no conflict of interest

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