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Mindfulness Breathing Reduce Stress in Final Student

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ABSTRACT

Background: Stress is a mental health problem often experienced by final year students due to academic demands, thesis completion, and future uncertainty. One non-pharmacological intervention that can be used to reduce stress is mindfulness breathing. **Objective:** The aim is to analyze the effect of mindfulness breathing on the stress levels of final year students at Semen Indonesia International University (UISI). **Methods:** The study used a quasi-experimental pretest-posttest design with a control group. The sample consisted of 86 students divided into an intervention group and a control group of 43 respondents each. Stress levels were measured using the Depression Anxiety Stress Scales (DASS-42) instrument. The intervention group was given mindfulness breathing exercises for 4 weeks with a duration of 10 minutes per day. **Results:** The results showed that before the intervention, most respondents experienced severe stress (99%). After the intervention, stress levels decreased to moderate (69%), mild (30%), and normal (1%) categories. The results of statistical tests showed a p value = 0.000 ($p < 0.05$). **Conclusion:** There is a significant effect of mindfulness breathing on reducing stress levels of final year students. This intervention can be an effective alternative in helping students manage academic stress.

Keywords: mindfulness breathing, stress, final year students, DASS-42, mental health

Background

Stress is a health problem that often affects students and teenagers aged 20 and over who experience demands. These demands typically occur in final-year students when working on their final assignments or theses, causing stress (1). Physical disorders caused by stress include headaches/migraine, sleep disorders such as insomnia, decreased immunity, and decreased appetite. The most common psychological disorders caused by stress are anxiety, depression, and mood swings (2). Based on interviews with students at Semen Indonesia International University, 20 out of 30 students experienced mild to moderate stress while completing their final assignments/thesis. Frequent symptoms such as anxiety and insomnia are early indicators of academic stress, which, if left untreated, can worsen into moderate to severe stress, depression, and even decreased academic performance. The high prevalence of mild stress indicates a significant mental health problem among final-year students. Students often respond to stress through negative activities such as staying up late and overthinking. Most students experiencing mild to severe stress also use pharmacological techniques such as taking painkillers, sedatives, and other medications to reduce their stress (3).

However, this is not a solution to reduce existing stress, instead it can lead to complications such as obesity, physical disorders, and psychological disorders. Stress management can also be done with non-pharmacological treatments such as Mindfulness-Based Stress Reduction (MBSR). This can also reduce stress levels in final year students. Based on previous research, non-pharmacological therapy can also reduce stress levels, but its administration has not been significant in reducing stress levels in final year students. However, the exact mechanism is still being studied, but evidence shows improvements in emotional regulation and cortisol reduction. Complementary treatments such as Mindfulness Breathing can be done for prevention, but the exact mechanism is still not fully explained scientifically (4).

Among students, stress often arises as a response to high academic, social and economic demands. According to (WHO) global data in Indonesia shows that around 30-50% of students experience high

levels of stress, which can lead to burnout, depression or decreased academic performance (5). The incidence figures according to a survey from the Indonesian Ministry of Health (2022) revealed that more than 40% of students in Indonesia experience symptoms of mild, moderate, and severe stress (6). In East Java, students experiencing high levels of stress were 1.8%, moderate stress reached 64.5%, and low stress was 33.6% (7). In Gresik Regency Rough estimates based on the East Java region (where Gresik is located) show student stress levels of around 55-65% (from regional studies such as those conducted by Airlangga University or the East Java Health Office).

The problem of stress among final-year students has existed since the pre-digital era until now. The main stress stems from academic burdens such as assignments and exams (5). However, with the development of technology and digitalization, stress levels have increased due to the pressures of social media and job competition. Research on mindfulness began in the 1970s by Jon Kabat Zinn with Mindfulness-Based Stress Reduction (MBSR), which later evolved into simple techniques like Mindfulness Breathing. Mindfulness breathing is typically done for 5-15 minutes per session and can be done one to three times daily. These short sessions are usually suitable for daily interventions or as needed. The reason researchers chose Mindfulness Breathing is because it is simpler than other techniques (8).

Mindfulness breathing is expected to be a meditation technique that involves awareness and calm. Mindfulness breathing is similar to Mindfulness-Based Stress Reduction (MBSR) developed by Jon Kabat-Zinn. This technique involves focusing on natural breathing to build present-moment awareness, reduce negative thoughts, and calm the nervous system. This technique is typically practiced for 5-20 minutes. The advantages of this technique are that it is easy to implement, low-cost, and can be integrated with digital applications (e.g., Headspace or Calm) (8).

Mindfulness breathing offers a holistic and proven solution to stress management in final-year students, supported by the latest scientific evidence. The differences between previous research and the current study are the population, methods, and variables. Therefore, the researchers were interested in this study. The objectives of this study were to identify stress in final-year students before the Mindfulness Breathing intervention, to identify stress in final-year students after the Mindfulness Breathing intervention, and to analyze the effect of Mindfulness Breathing on stress in final-year students.

Methods

This study used a quasi-experimental design. This design was used to measure the stress levels of final-year students, who were divided into two groups: a control group and an intervention group. Both groups were pre-tested using the DASS 42 (Depression Anxiety Stress Scales). The pre-test/post-test included a non-equivalent control group, where the intervention group (n=43) received mindfulness breathing exercises for 4 weeks (daily 10-minute sessions), while the control group (n=43) received no intervention. Data were collected using the Depression Anxiety Stress Scales (DASS 42). This analysis used the Paired T-test if the data were normally distributed and the Mann-Whitney test if the data were not normally distributed to examine differences in stress between groups before and after the Mindfulness Breathing intervention. The population in this study were all final year students (3rd or 4th year) in the Management and Sharia Economics Study Program of Semen Indonesia International University (UISI) who experienced mild to moderate stress levels as many as 110 based on the DASS (Depression Anxiety Stress Scales) criteria. The sample will be divided into 2 groups so that the sample size in each group is 43 respondents. The 110 respondents were divided into 2 parts, namely the intervention group of 43 students and the control group of 43 students. Data analysis used the Mann-Whitney test, to identify the effect of Mindfulness breathing on stress in final year students using the paired two-sample T test (Paired T test) P value <0.05.

Results

Table 1. Stress categories in final year students before and after being given the Mindfulness breathing intervention.

Stress categories	Treatment group				Control group			
	Pre test		Post test		Pre test		Post test	
	n	%	n	%	n	%	n	%
Normal	0	0	1	1%	0	0	0	0
Mild	0	0	13	30%	0	0	0	0
Moderate	1	1%	29	69%	3	7%	6	14%
Severe	42	99%	0	0	40	93%	37	86%
	43	100%	43	100%	43	100%	43	100%

Paired simple T-test = 0,000

Table 1 shows that before receiving Mindfulness Breathing therapy, both the control and treatment groups were predominantly severely stressed. The treatment group consisted of 42 students (99%), and the control group consisted of 40 students (93%). After receiving Mindfulness Breathing therapy, there was a significant difference between the treatment group and the control group, with 29 students (69%) classified as moderately stressed, while the control group consisted of 37 students (86%) classified as severely stressed.

The t-test results showed at-value of -14.389 with 78.849 degrees of freedom (df) and a significance level (p) of 0.000 ($p < 0.05$). This indicates a significant difference between the treatment and control groups in posttest stress scores. The mean difference of -8.23 indicates that the average stress level in the treatment group was lower than that in the control group. Furthermore, the 95% confidence interval ranged from -9.37 to -7.09, indicating that the difference was consistent and statistically significant. Thus, it can be concluded that there was a significant difference between the treatment and control groups after the intervention. These results indicate that the mindfulness breathing intervention was effective in reducing stress levels in final-year students.

Discussion

Table 1 shows that before Mindfulness Breathing therapy was administered, the students were in the severe category. Several studies in the past five years have shown that individual student characteristics, such as age, gender, and semester level, are often discussed as factors related to academic stress or psychosocial conditions (9). The results of the study showed that most of the respondents were in the 21-year age group, namely 21 people. Final semester students in undergraduate programs are generally in the early 20s, and 21-year-olds who have entered early adulthood (10). According to Elizabeth B. Hurlock, early adulthood is a period of adjustment to new life patterns and new social expectations, which often causes emotional stress if individuals are unable to adapt optimally. Hurlock states that individuals in early adulthood tend to experience emotional tension due to the demands of responsibility and academic achievement (11). This opinion is supported by John W. Santrock who stated that early adulthood is a challenging period because individuals begin to face the pressures of education, work and social relationships, making them vulnerable to stress if their coping skills are inadequate (12). Thus, age is a factor influencing students' stress levels, especially in early adulthood, which faces numerous developmental and academic demands.

Based on the research results, the majority of respondents were female. In the treatment group, there were 26 female respondents and 17 male respondents. Meanwhile, in the control group, there were 24 female respondents and 19 male respondents. Women tend to be more sensitive to emotional stress and are more prone to anxiety when facing academic demands. Furthermore, women generally tend to think more deeply about problems, resulting in higher levels of perceived stress (13). According to Gail W. Stuart, women have a higher emotional response to stressors than men. Women tend to be more emotionally expressive, making them more susceptible to anxiety and psychological stress (14). Another

opinion was put forward by Shelley E. Taylor, who stated that women are more susceptible to stress due to the influence of hormonal, psychological, and social factors. Women also tend to use emotionally focused coping, making them more sensitive to environmental pressures (15).

In this study, stress in female students was influenced by academic demands, pressure to achieve good results, and anxiety about the future after graduation. Therefore, female students need psychological support and good stress management strategies. Most respondents were in their 8th semester. In the treatment group, there were 25 respondents (58%) in their 8th semester and 18 respondents (42%) in their 7th semester. Meanwhile, in the control group, there were 22 respondents (51%) in their 8th semester and 21 respondents (49%), this indicates that final semester students are more susceptible to stress than in previous semesters. Eighth semester students are generally in the process of completing their thesis or final assignment, which requires time, concentration, and significant responsibility. In addition, the pressure to graduate quickly is also a factor that increases students' psychological stress. The results of the study showed that 108 final year students of the Faculty of Nursing, University of Indonesia showed a relationship between psychological well-being and stress levels with a negative correlation ($r = -0.649$; $p = 0.000$) (16). Academic stress arises from the pressure of studying, academic assignments, and concerns about achieving achievements that can affect students' psychological condition (17). Final-semester students also face obstacles such as thesis revisions, difficulty finding references, limited research time, and anxiety about graduation. These conditions can lead to prolonged stress if not balanced with good coping skills.

The results showed that before receiving Mindfulness Breathing therapy, almost all respondents were in the severe stress category (42 people) (99%). After the intervention, stress levels decreased, with the majority of respondents in the moderate category (29 people) (69%), mild category (13 people), and normal category (1%), indicating that Mindfulness Breathing therapy is effective in reducing stress levels in final-year students. This technique helps individuals focus on their breathing and current conditions, thereby reducing anxiety, tension, and negative thoughts.

According to Jon Kabat-Zinn, mindfulness is a full awareness of present-moment experiences without judgment. Mindfulness practice can help individuals control emotions, increase calm, and reduce psychological stress (18). This opinion is supported by Ruth A. Baer who stated that mindfulness techniques are effective in reducing stress because they help individuals focus more on current conditions and reduce excessive emotional responses to the problems they face (19). Physiologically, deep breathing exercises can also help reduce sympathetic nervous system activity, resulting in a more relaxed and calmer body. Therefore, students who practice mindfulness breathing may be better able to cope with academic stress.

Table 1 shows that the t-test results show a t-value of -14.389 with 78.849 degrees of freedom (df) and a significance level (p) of 0.000 ($p < 0.05$). This indicates a significant difference between the treatment and control groups in post-test stress scores. Therefore, it can be concluded that there was a significant difference between the treatment and control groups after the intervention. These results indicate that the mindfulness breathing intervention is effective in reducing stress levels in final-year students. Mindfulness breathing works through directed attention shifting and physiological regulation by focusing attention on the sensation of breathing (in-out breath, chest/abdominal movement), individuals reduce automatic engagement in ruminative thoughts and emotional reactivity, so that the activity of the default mode network (DMN) neural network associated with mind-wandering decreases while prefrontal cortical connectivity that supports monitoring and control of attention increases; physiologically, slow and regular breathing stimulates the parasympathetic nervous system via vagal afferents, decreasing heart rate and cortisol response, which together reduce stress arousal and facilitate a calmer cognitive state, increasing the capacity for emotional regulation and adaptive decision-making in stressful situations (20). Mindfulness breathing reduces stress in final-year college students through an emotion regulation mechanism by practicing full awareness of the breath in the present moment without judgment. The study showed that the mindfulness breathing intervention showed a decrease in the average stress score from 87.60 (pretest) to 64.71 (posttest); t-test result = 3.894, $p = 0.008$ ($p < 0.05$). The findings indicate that mindfulness-based group counseling services are effective in reducing academic stress and strengthening emotion regulation in college students. This mechanism works by breaking the cycle of ruminative thoughts typical of final-year college students facing the pressure of their thesis and future, allowing them to accept academic stressors sincerely without overreacting (21).

The results of the study show that the application of mindfulness, whether through structured training programs, meditation practices, or as an individual psychological disposition, consistently has a positive impact on improving students' self-control. Mindfulness has been proven to help students improve emotional regulation, reduce impulsive behavior, increase attention focus, and support adaptive stress management. These findings indicate that mindfulness has great potential to be integrated into formal education programs as preventive strategies and self-development interventions, to support the formation of character and psychological well-being of students in a sustainable manner (22).

Conclusions and Recommendations

Before the intervention, the majority of students experienced very severe stress (99%). After the intervention, the stress levels of those with severe stress decreased to moderate (69%). A paired t-test yielded a t-value of -14.389 with 78.849 degrees of freedom (df) and a significance level ($p < 0.05$). This indicates a significant difference between the treatment and control groups in post-test stress scores.

Therefore, it can be concluded that there was a significant difference between the treatment and control groups after the intervention. These results indicate that the mindfulness breathing intervention was effective in reducing stress levels in final-year students. In the control group, which did not receive the Mindfulness Breathing intervention, the majority of students' stress levels remained in the severe category both before and after the measurement. This suggests that without intervention or stress management strategies, students tend to continue experiencing high levels of stress. The Mindfulness Breathing intervention can help students relax, improve emotional control, reduce anxiety, and enhance coping skills in the face of academic pressure.

Ethical Consideration and Competing Interest

Ethics in research is crucial in conducting research, considering that nursing research directly impacts human beings. Therefore, ethical aspects of research must be considered, as human beings have fundamental rights in research activities. This research has undergone ethical testing and received an ethical clearance certificate from the KEPK of Noor Huda Mustofa University Number 3043/KEPK/UNIV-NHM/EC/11/2026. There are no conflicts of interest in this research or the writing of this article.

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