

The effects of group mindfulness-based cognitive therapy in nursing students: A quasi-experimental study

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ABSTRACT

Background: Academic and clinical stressors are experienced by most nursing students enrolled in a nursing education program. The students who cannot effectively deal with these stressors experience stress, anxiety and depression.

Objective: The aim of this study was to determine the effects of group mindfulness-based cognitive therapy on mindfulness, depression, anxiety, and stress levels in nursing students.

Design: This quasi-experimental study was carried out using a nonrandomized control group pre-test, post-test, and follow up design.

Setting: Department of Nursing, Faculty of Health Sciences, University of Aksaray, Turkey.

Participants: Eighty-two second-year undergraduate university nursing students.

Methods: The group mindfulness-based cognitive therapy program was conducted with the experimental group. The Mindful Attention Awareness Scale (MAAS) and The Depression, Anxiety and Stress Scale (DASS) were measured at pre- and post- intervention, and at a 4-months follow-up.

Results: The post-test mean scores of MAAS of the experimental group were statistically higher than the control group ($p = .006$). When the mean scores obtained in the pre-test, post-test and follow-up measurements were compared, the mean scores of MAAS increased ($p = .000$) and stress scores decreased significantly in the experimental group ($p = .004$).

Conclusion: A group mindfulness-based cognitive therapy program conducted with nursing students had an effect on students' mindful attention awareness and stress levels. These study results indicate that this program can be used to reduce the levels of stress in nursing students.

1. Introduction

Academic and clinical stressors are experienced by most nursing students enrolled in a nursing education program (Labrague et al., 2018). These stressors can be triggered by exam preparation, course workload, paying course fees, unmet personal needs, heavy workload, patient care, teachers' critiques, caring for dying patients, fear of making practice errors, and experiencing bullying and discrimination in clinical settings (Bahadır-Yılmaz, 2016; Brown et al., 2016; Labrague et al., 2018; Aliafsari-Mamaghani et al., 2018). Although nursing students have been shown to use both adaptive and maladaptive coping strategies to manage these academic and clinical problems, students who cannot effectively deal with these stressors exhibit higher stress levels (McCarty et al., 2018). As a result they may experience anxiety

and depression (Shikai et al., 2009; Kurebayashi et al., 2012). Depression, in particular, may lead students to attempt suicide (Aradilla-Herrero et al., 2014).

The studies focusing on depression and anxiety in nursing students in Turkey reported that they experienced high levels of depression and anxiety. Cam and Top (2018) and Deveci et al. (2013) reported that the prevalence of depression symptoms in nursing students was found to be 26.7% and 18.3%, respectively. Another study (Tekir et al., 2018) indicated a prevalence of 17.1% depression in nursing and midwifery students. In a study conducted by Yüksel and Bahadır-Yılmaz (2019), it was found that 20.3% of nursing students had moderate depression and 5.8% had severe depression. They found also that 19.7% of nursing students had moderate anxiety and 25.2% had severe anxiety (Yüksel and Bahadır-Yılmaz, 2019). According to Gümiş and Zengin (2018),

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16.9% of nursing students experienced intense depression symptoms and 30.2% of them experienced high levels of anxiety symptoms. For these reasons, mindfulness-based therapeutic approaches are presently being considered to address these issues in nursing students (Kang et al., 2009; He et al., 2018; Van der Riet et al., 2018).

2. Background

Mindfulness is an experiential process where a person's attention is directed purposefully and consciously to what is happening at the present moment in the body and mind. Whatever is experienced should be accepted with curiosity, understanding and compassion in a non-judgmental and nonreactive manner (Hisli-Şahin and Yeniçeri, 2015). According to Kabat-Zinn (2003), mindfulness is a technique that emerges through paying attention on purpose, in the present moment, and in a nonjudgmental manner. Mindfulness is a state in which a person is able to focus on the present moment and on surrounding environment and activities. The goal is to concentrate on these things without being distracted by thoughts about the past or the future (Guillaumie et al., 2017).

Mindfulness interventions for nursing students improve capacities for mindfulness and decrease stress, anxiety, and depression. They also improve academic skills, quality of life, well-being, empathy, and the control of one's emotions (Kinsella et al., 2018). According to Walker and Mann (2016), incorporating mindfulness into the nursing curriculum offers students the tools to deal more effectively with the stressors they face during their studies. Wiguna et al. (2018) define mindfulness as a holistic intervention that significantly improves mental health and supports learning productivity to improve academic achievement in nursing students.

The studies have confirmed many advantages of mindfulness-based interventions for nursing students. One mindfulness-based intervention study found that mindfulness training in nursing students was associated with higher emotional intelligence (Snowden et al., 2015). Van der Riet et al. (2015) reported that a stress management and mindfulness program for undergraduate nursing students showed a positive impact on sleep, concentration, clarity of thought and a reduction in negative thoughts. Dubert et al. (2016) also reported that there was a direct and positive effect of mindfulness on nursing students' working memory capacity and ability to control emotions. In another study with nursing students, an online asynchronous mindfulness meditation intervention improved cognitive functions such as ability to shift attention, attention selection, concentration, and accuracy (Spadaro and Hunker, 2016). Mindfulness training has also been shown to improve mindfulness and some aspects of ethical decision making, and as a teaching-learning strategy, mindfulness practice can increase a sense of calm and decrease anxiety (Sanko et al., 2016; Schwind et al., 2017).

Several studies have been conducted to examine the effects of mindfulness-based interventions on students' depression, anxiety, and stress levels. Ratanasiripong et al. (2015) reported that mindfulness meditation decreased anxiety and stress levels in nursing students. Song and Linquist (2015) revealed that mindfulness-based stress reduction significantly reduced depression, anxiety and stress, and increased mindfulness in Korean nursing students. Spadaro and Hunker (2016) stated that mindfulness meditation intervention decreased stress and anxiety levels of nursing students. Sipe and Eisendrath (2012) stated that mindfulness-based cognitive therapy was characterized by distinguishing dysfunctional and negative thoughts from healthy thoughts, testing and challenging dysfunctional beliefs and inventing new interpretations, and reinforcing more adaptive responses. Therefore, we aimed to determine whether group mindfulness-based cognitive therapy would be effective on Turkish nursing students' mindfulness, depression, anxiety, and stress levels.

3. Methods

3.1. Design

This quasi-experimental study was carried out in 2018 using a nonrandomized control group pre-test, post-test, and follow up design.

3.2. Setting and sample

This study was conducted with 120 s-year nursing students who were enrolled in The Faculty of Health Sciences at a state university located in Central Anatolia of Turkey during the academic year 2018–2019. The sample size was calculated using the sample size calculator Raosoft (2004). The power calculation indicated that the required sample size was 81 students. The significance level was ($\alpha = 0.05$), the large effect size ($d = 0.80$) and power were 80%. Eventually 82 students agreed to participate in the study, and 41 students for each of the intervention and control groups were selected. A randomization method was not used for the assignment of students to groups. However, the students who wanted to continue the intervention sessions without interruption were assigned to the experimental group and the other undecided students were assigned to the control group. The inclusion criteria for the study required that participants be a second-year nursing student, had no psychiatric illness and volunteered to participate in the study. The exclusion criteria for the study mandated that students could not have been previously exposed to conscious awareness training.

3.3. Ethical considerations

Written approval to conduct this study was obtained from the Aksaray University School of Nursing, and approval was also obtained from the Ethics Committee of Aksaray University (number: 2018/58 and date: 01/03/2018). The aim of this study was explained to the participants and their verbal and written consent was received.

3.4. Data collection tools

3.4.1. The Personal Information Form (PIF)

The PIF, which was developed by the researcher, included 12 questions about the sociodemographic characteristics of the students. These were age, gender, high school graduation, desire to study nursing, number of siblings, perceived economic status, view about relationship with mother and father, presence of physical disease, using medication, history of psychological problem, and history of psychotherapy.

3.4.2. The Mindful Attention Awareness Scale (MAAS)

The MAAS was developed by Brown and Ryan (2003) and adapted into Turkish by Özyeşil et al. (2011). The 6-point Likert-type scale consisted of 15 items and was scored as "almost always = 6" to "almost never = 1" and scores from the scale varied between 15 and 90. A high score indicated that mindful attention awareness was high. The Cronbach Alpha internal consistency of the scale was 0.82. In this study, the Cronbach Alpha value was 0.78.

3.4.3. The Depression, Anxiety and Stress Scale (DASS)

The DASS was developed by Lovibond and Lovibond (1995), and the study of validity and reliability of the scale was conducted by Akın and Çetin (2007). The 4-point Likert-type scale consisted of 42 items, and 14 items were included in each category of depression, anxiety, and stress dimensions. The scale was scored as "0 = did not apply to me at all" to "3 = applied to me very much, or most of the time". The scores from each dimension ranged from 0 to 42. The high scores indicated

Table 1
The sociodemographic characteristics of the students in the experimental and control groups.

Characteristics	Experimental group (n = 41)	Control group (n = 41)	test/p value	
Age ($X \pm SD$)	20.29 \pm 0.95	20.31 \pm 1.10	$\chi^2 = 1.363^a$ p = .851	
Gender (%)	Female	80.5	63.4	$\chi^2 = 2.961$ p = .085
	Male	19.5	36.6	
High school graduation (%)	Anatolian high school	58.5	65.9	$\chi^2 = 1.767$ p = .413
	General high school	31.7	19.5	
	Vocational health high school	9.8	14.6	
Desire to study nursing (%)	Yes	70.7	68.3	$\chi^2 = 0.058$ p = .810
	No	29.3	31.7	
Number of siblings (%)	0	4.9	0.0	$\chi^2 = 6.305$ p = .178
	2	19.5	24.4	
	3	24.4	36.6	
	4	22.0	26.8	
	5 and \uparrow	29.3	12.2	
Perceived economic status (%)	Low	19.5	29.3	$\chi^2 = 1.058$ p = .304
	Moderate	80.5	70.7	
View about relationship with mother (%)	Unstable and conflicting	17.1	4.9	$\chi^2 = 5.492$ p = .139
	Democratic	41.5	48.8	
	Protector	36.6	46.3	
View about relationship with father (%)	Accusatory and authoritarian	4.9	0.0	$\chi^2 = 3.177$ p = .365
	Unstable and conflicting	14.6	17.1	
	Democratic	46.3	51.2	
	Protector	31.7	31.7	
Presence of physical disease (%)	Accusatory and authoritarian	7.3	0.0	$\chi^2 = 0.125$ p = .724
	No	90.2	87.8	
Using medication (%)	Yes	9.8	12.2	$\chi^2 = 0.000$ p = 1.000
	No	92.7	92.7	
History of psychological problem (%)	Yes	7.3	7.3	$\chi^2 = 0.346$ p = .556
	No	95.1	97.6	
History of psychotherapy (%)	Yes	4.9	2.4	$\chi^2 = 0.000$ p = 1.000
	No	95.1	95.1	
	Yes	4.9	4.9	

that the person had problems related to that dimension. The Cronbach Alpha internal consistency of the scale was 0.89. In this study, the Cronbach Alpha value was 0.95; 0.90 for depression, 0.86 for anxiety, and 0.92 for stress.

3.4.4. Data collection

The study was conducted March 26, 2018 to October 4, 2018. Experimental and control groups were formed and the experimental group was divided into three groups, each consisting of 13–14 students. During the first session of the training program (April 3–6, 2018), the program content was explained in detail, written informed consent was obtained, and scales were applied. Pre-test measurements of the control group were also completed during this time. The eight-session training program was conducted with each group that formed the experimental group. The trainings took place from May 22–25, 2018 and the final test measurements of the experimental and control groups were then completed. After four months, follow-up measurements of both groups were completed from September 25–28, 2018. From October 1–4, 2018, after the measurements related to the work were complete, the control group (divided into two groups) participated in a two-hour informative meeting on the content of the training program. During the follow-up, the measurements in the control group were completed with 39 students because one of the students left school and another student transferred to a different university.

3.4.5. Intervention

The group mindfulness-based cognitive therapy program consisted of eight weekly sessions with each session lasting approximately two hours. The intervention was conducted by the first researcher who had received training and supervision on cognitive and behavioral therapy and mindfulness-based stress reduction. The conceptual framework of the program was based on mindfulness-based stress reduction (Ratanasiripong et al., 2015; Song and Linquist, 2015; Spadaro and Hunker, 2016) and

mindfulness-based cognitive therapy (Sipe and Eisendrath, 2012; Schwarze and Gerler, 2015). The group mindfulness-based cognitive therapy program included stress, cope with stress, stress coping methods, mindfulness, mindfulness-based techniques, and dysfunctional beliefs such as cognitive distortions and automatic thoughts.

The titles and contents of the sessions were as follows:

Session 1: Meeting, information given about how the group will be conducted, expressing expectations and giving information about the concept of mindfulness, administering pre-tests.

Session 2: Understanding the relationship between the cognitive model and cognitive distortions, emotion, thought and behavior, and attaining the skills to recognize cognitive errors.

Session 3: Mindfulness, to be here and now, to live in the moment, mindful breathing exercises, awareness of daily activities.

Session 4: Automatic thoughts, questioning one's own automatic thoughts, asking the right questions to reach a correct assessment, automatic pilot recognition.

Session 5: Stress coping methods: What is stress?, What are the effects of stress?, How can we deal with stress?

Session 6: Methods to cope with stress: explaining the concept of non-functional thinking during stressful experiences, dealing with non-functional negative automatic thoughts, recognizing evidence that supports and does not support negative automatic thoughts.

Session 7: Confronting difficulties, accepting painful emotions, becoming aware during breathing exercises, meditation of body scan, meditation of sounds and thoughts.

Session 8: Evaluation, summarizing, getting feedback from group members, and administering post-tests.

3.4.6. Data analysis

The study data were analyzed using the SPSS 24 package program. The descriptive statistics, such as percentage, arithmetic mean, and

standard deviation were used in the analysis of sociodemographic characteristics. The Chi-square test was used to compare the descriptive features between groups. The Mann-Whitney *U* Test was used to compare the mean scores of the scales between the groups. The Friedman Test and Bonferroni Corrected Wilcoxon Signed Ranks Test were used to compare the mean scores of the scales in-group.

4. Results

Table 1 shows the sociodemographic characteristics of the students in the experimental and control groups. The mean age of the students in the experimental group was 20.29 ± 0.95 and 20.31 ± 1.10 for the control group. There was no difference between the two groups in terms of sociodemographic variables, such as age, gender, high school graduation, desire to study nursing, number of siblings, perceived economic status, view about relationship with mother and father, presence of physical disease, using medication, history of psychological problem, and history of psychotherapy ($p > .05$). The two groups were composed primarily of female students ($E = 80.5$, $C = 63.4$). They confirmed their desire to study nursing ($E = 70.7$, $D = 68.3$) and reported their perceived economic status to be at a moderate level ($E = 80.5$, $D = 70.7$).

Table 2 compares the mean scores of the pre-test, post-test and follow-up scores of the experimental and control groups in the categories of mindful attention awareness, depression, anxiety and stress. The pre-test mean scores of MAAS, DASS, depression, anxiety and stress did not differ significantly between the experimental and control groups. The post-test mean scores of DASS, depression, anxiety and stress also did not differ significantly between the experimental and control groups. But the post-test mean scores of MAAS of the experimental group were statistically higher than the control group. The follow-up test mean scores of MAAS, DASS, depression, anxiety and stress did not differ significantly between the experimental and control groups.

When the mean scores obtained in the pre-test, post-test and follow-up measurements were compared, the mean scores of MAAS increased and stress scores decreased significantly in the experimental group.

Table 2

The pre-test, post-test and follow-up mean scores of MAAS, DASS, depression, anxiety and stress of the experimental and control groups.

Scale		Experimental group (n = 41)	Control group (n = 41)	Test value	P value
		<i>X</i> ± SD	<i>X</i> ± SD		
MAAS	Pre-test	60.04 ± 10.25	60.65 ± 10.34	-0.228	0.820
	Post-test	67.24 ± 13.19	60.56 ± 11.35	-2.775	0.006
	Follow-up	64.90 ± 13.24	62.15 ± 11.79	-0.978	0.328
	Test value	24.988	0.276		
	P value	0.000	0.871		
Depression	Pre-test	8.46 ± 7.48	8.89 ± 8.06	-0.135	0.893
	Post-test	6.68 ± 6.47	8.17 ± 9.55	-0.689	0.491
	Follow-up	6.60 ± 7.33	8.69 ± 9.12	-0.922	0.356
	Test value	1.479	0.054		
	P value	0.477	0.973		
Anxiety	Pre-test	9.87 ± 7.09	8.10 ± 7.12	-1.440	0.150
	Post-test	8.75 ± 6.48	8.66 ± 8.57	-0.530	0.596
	Follow-up	8.19 ± 6.99	7.66 ± 8.21	-0.922	0.357
	Test value	2.537	1.911		
	P value	0.281	0.385		
Stress	Pre-test	17.12 ± 10.16	14.48 ± 8.95	-1.091	0.275
	Post-test	14.00 ± 8.50	15.48 ± 10.34	-0.413	0.679
	Follow-up	11.92 ± 7.47	14.97 ± 10.15	-1.099	0.272
	Test value	10.859	2.503		
	P value	0.004	0.286		
DASS	Pre-test	35.46 ± 22.35	31.48 ± 21.75	-0.812	0.417
	Post-test	29.43 ± 18.75	32.33 ± 26.83	-0.009	0.993
	Follow-up	26.73 ± 19.84	31.33 ± 26.15	-0.453	0.651
	Test value	2.770	0.171		
	P value	0.250	0.918		

Bold data indicate significance at $p < 0.05$

According to the Wilcoxon Signed Rank Test with the Bonferroni Correction Test, there was a difference between the MAAS score averages in pre-test-post-test, pre-test-follow-up test and post-test-follow-up measurements. The difference between the mean pre-test-post-test and pre-test-follow-up stress points in the group was determined, however, there was no difference in post-test-follow-up test stress points. Again, there was no difference in the mean scores of depression and anxiety obtained in the pre-test, post-test and follow-up measurements of the experimental group. When the control group measurements were evaluated, there was no difference in the MAAS, DASS, depression, anxiety and stress mean scores.

The mean curves of the scores of MAAS in the experimental group increased from pre-test to post-test (Fig. 1). The mean curves of the scores of depression, anxiety, stress and DASS in the experimental group decreased from pre-test to post-test (Figs. 2–5). From post-test to follow-up test, the experimental mean MAAS curve decreased, but the scores were still higher than the control group. From post-test to follow-up test, the experimental mean depression curve did not decrease, but the experimental mean anxiety, stress and DASS curve decreased.

5. Discussion

The present study results determined that group mindfulness-based cognitive therapy program had a positive effect on students' mindful attention awareness levels. Similarly, in a study in which a mindfulness-based meditation program was applied, the mindfulness levels of nursing students increased after the program (Sanko et al., 2016). In another study conducted with medical students, the mindfulness-based peer-led program had led to significant changes in the described and nonreactivity dimensions of MAAS in students (Danilewitz et al., 2016). In another study, mindfulness-based intervention positively influenced the awareness and acceptance levels of MAAS in students (Chiodelli et al., 2018). However, in a study conducted with medical and psychology students, mindfulness-based stress reduction education did not affect students' mindfulness levels (De Vibe et al., 2015). Research has confirmed that mindfulness decreases stress symptoms, provides emotional balance, and improves attention and cognitive skills (Van der

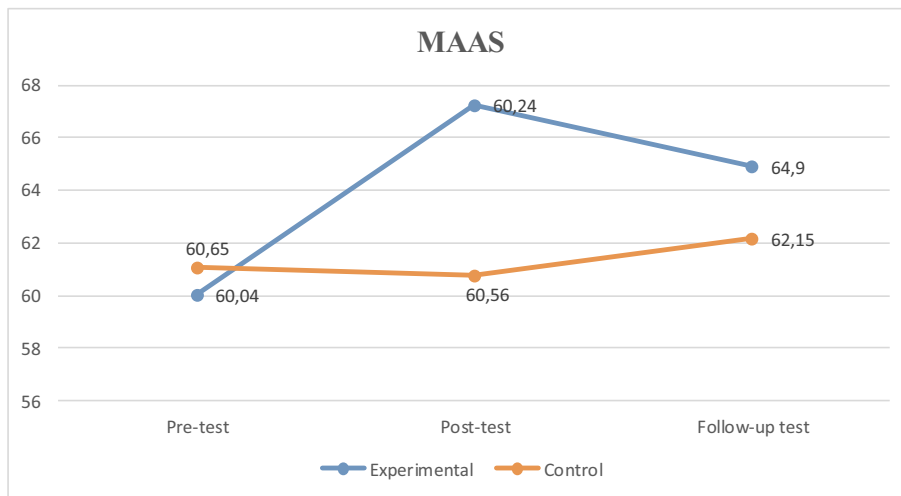


Fig. 1. The slop curve of MAAS.

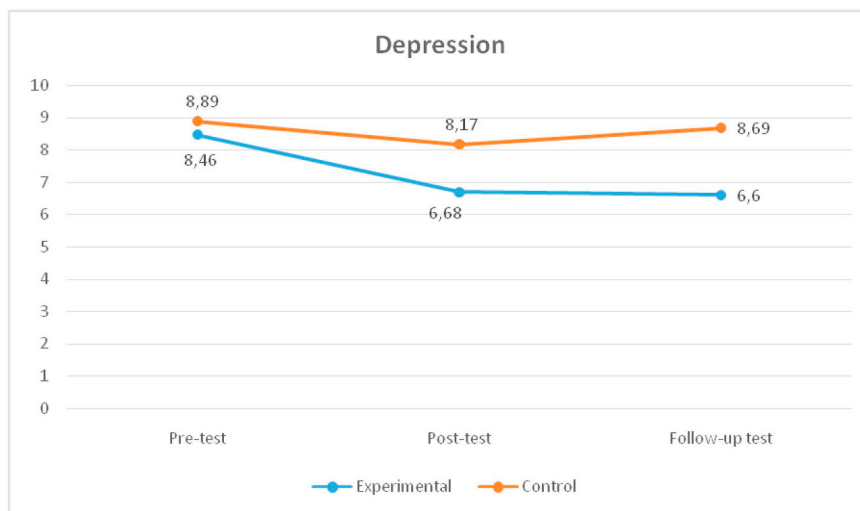


Fig. 2. The slop curve of depression.

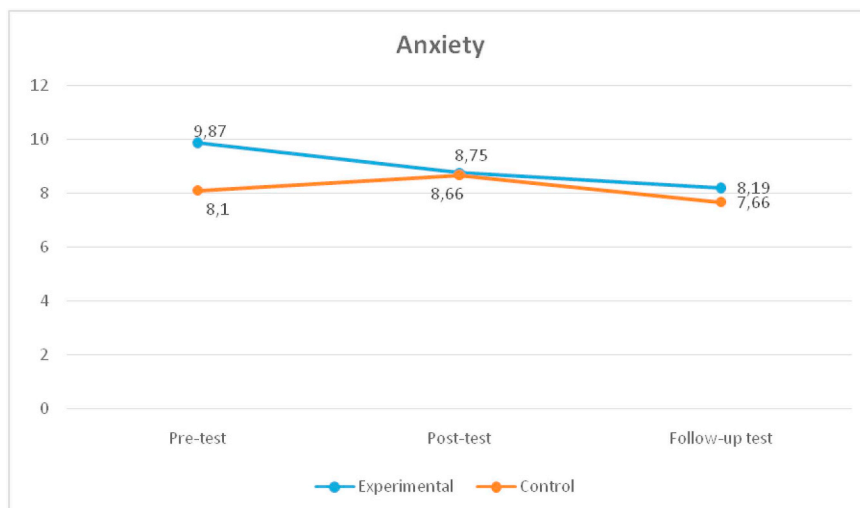


Fig. 3. The slop curve of anxiety.

Riet et al., 2015; Dubert et al., 2016; Spadaro and Hunker, 2016). Therefore, using mindfulness-based approaches to address students' academic and clinical stressors as they navigate the demands of their

nursing education may help them cope with stressors by raising their level of mindful attention awareness.

The present study determined that a group mindfulness-based

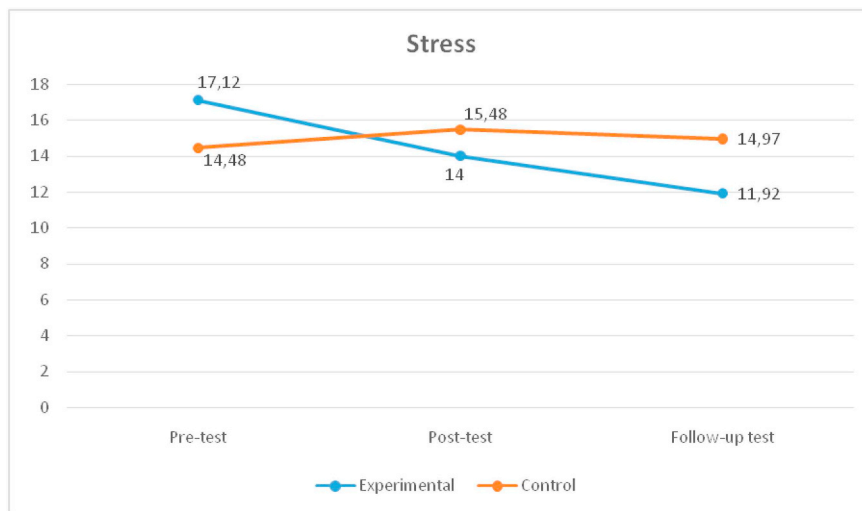


Fig. 4. The slop curve of stress.

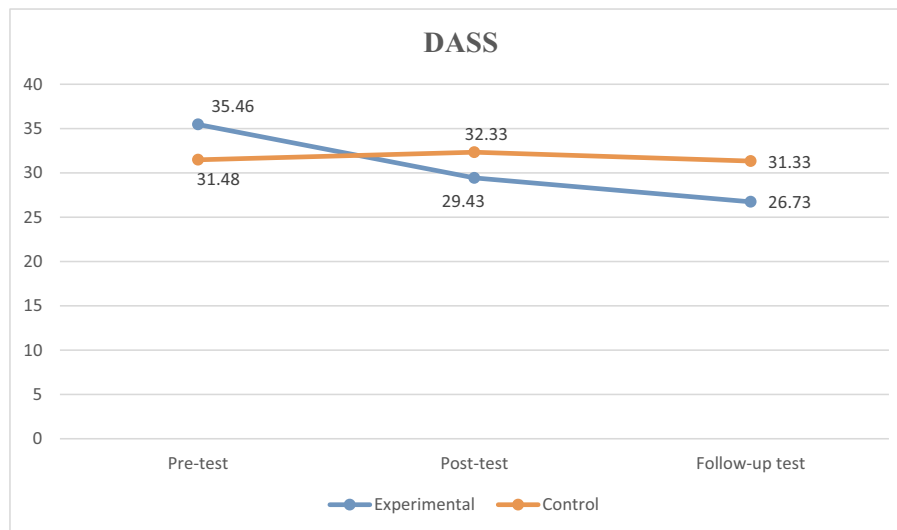


Fig. 5. The slop curve of DASS.

cognitive therapy program had a positive effect on students' stress levels. Similarly, two other studies in which mindfulness-based meditation intervention was applied to nursing students found that the students' stress levels decreased (Ratanasiripong et al., 2015; Spadaro and Hunker, 2016). Another study with Korean nursing students, in which they underwent mindfulness-based stress reduction intervention, students' mindfulness levels increased while stress levels decreased (Song and Linquist, 2015). When short group mindfulness-based cognitive therapy was applied to reduce stress in medical students, their level of mindfulness increased and their stress levels were reduced (Pang et al., 2016).

Reports have suggested that a non-judgmental attitude is the strongest predictor of mindfulness, low depression, anxiety and stress levels; non-reactivity is the strongest predictor of stress and depression levels; and awareness is the strongest predictor of anxiety and stress levels (Medvedev et al., 2018). Ratanasiripong et al. (2015) reported that a mindfulness-based meditation program was effective in managing nursing students' anxiety. Song and Linquist (2015) carried out a mindfulness-based stress reduction program with nursing students and found that the levels of depression and anxiety in students decreased after the program. In the study of Falsafi (2016), depression and anxiety levels of university students decreased after the mindfulness program.

However, contrary to the aforementioned studies, the present study determined that a group mindfulness-based cognitive therapy program did not affect students' depression and anxiety levels. Even though there was a decrease in students' depression and anxiety mean scores, this decrease was not statistically significant. Similarly, in the Shearer et al. study (2016), a short mindfulness-based meditation intervention reduced students' anxiety levels but did not cause a significant change in depression levels. Another study revealed that a stress coping program based on mindfulness meditation showed significantly reduced anxiety of nursing students, but it was ineffective toward depression (Kang et al., 2009). The systematic review and meta-analysis conducted by Chi et al. (2018) reported that mindfulness-based stress reduction programs have a moderate effect on adolescents and young adults, yet this effect does not continue in follow-up measurements. Kim et al. (2004) reported that psychosocial stress interventions in nursing students decreased stress and improved problem-focused coping, but it was ineffective toward anxiety and depression. In the present study, the contents of mindfulness-based cognitive therapy program composed of stress and mindfulness. The interventions for depression and anxiety were not included in program. For these reasons, it can be said that mindfulness-based cognitive therapy program is ineffective toward depression and anxiety in the present study.

6. Conclusion

Finally, it was determined that a group mindfulness-based cognitive therapy program conducted with nursing students had an effect on students' mindful attention awareness and stress levels. However, the program did not cause any change in the anxiety and depression levels of the students. Nevertheless, these study results indicate that this program can be used to reduce the levels of stress in nursing students. Furthermore, the program should be developed and implemented with the goal of improving the psychological well-being of students with anxiety and depression problems.

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Declaration of competing interest

The authors report no actual or potential conflict of interest.

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Submission declaration

This manuscript is not under consideration for publication elsewhere, its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and if accepted for publication, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder.

Author contributions

Study design: AY, EBY; Data collection: AY, EBY; Data analysis: AY, EBY; Manuscript writing: AY, EBY.

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