

The Effect of Mindful Breathing Exercise on Stress Levels of Nursing First Year Students Before First Clinical Experience

Hemşirelik Birinci Sınıf Öğrencilerinde Bilinçli Farkındalık Nefes Egzersizinin İlk Klinik Uygulama Stresine Etkisi

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ÖZET

Amaç: Hemşirelik eğitiminin ayrılmaz bir parçası olan klinik uygulamalar, özellikle birinci sınıf hemşirelik öğrencilerinde ciddi düzeyde stres yaratır. Hemşirelik öğrencilerinin yaşadığı klinik öncesi stresi yönetmek önemlidir. Bu çalışmada, bilinçli farkındalık nefes terapi uygulamasının birinci sınıf hemşirelik öğrencilerinin ilk klinik öncesi deneyim öncesi stres düzeyleri üzerinde etkili olup olmadığı araştırıldı.

Yöntem: Tek grup ön test-son test çalışma tasarımında yarı deneysel olarak 42 hemşirelik birinci sınıf öğrencisinin katılımıyla gerçekleştirildi. Başvuru öncesinde tüm öğrencilere Öğrenci Bilgi Formu, Görsel Analog Skala ve Pagana Klinik Stres Anketi uygulandı. Uzman araştırmacı tarafından 30 dakika nefes terapi uygulaması gerçekleştirildi. Haftada bir kez toplam 3 hafta süresince gerçekleştirildi. Her uygulamaya 30 dakika devam edildi. Uygulama sonrası ölçümler tekrarlandı.

Bulgular: Öğrencilerin yaş ortalaması $19.13 \pm .92$ 'dir. VAS'a göre, nefes terapi uygulaması öncesi öğrencilerin yaşadığı stres düzeyi 6.77 ± 1.64 iken, nefes terapi üçüncü uygulaması sonrası stres düzeyinin 2.64 ± 2.06 'ya düştüğü belirlendi. Uygulama öncesi ortalama klinik stres skoru 28.60 ± 10.13 ve üçüncü uygulamadan sonra 16.37 ± 9.08 idi. Öğrencilerin Klinik Stres Anketinin ortalama puanları ölçümlere göre ayrı ayrı karşılaştırıldığında, nefes terapisi uygulanmadan önce yapılan tüm ölçümlerde streslerinin istatistiksel olarak anlamlı düzeyde azaldığı görüldü.

Sonuç: Bu çalışma ile ilk kez kliniğe gidecek hemşirelik öğrencilerinin stresini azaltmada bilinçli solunum tedavisi uygulamasının etkili olduğu bulunmuştur.

Anahtar Kelimeler: Nefes terapi, bilinçli farkındalık, klinik stres, hemşirelik öğrencileri.

ABSTRACT

Aim: Clinical practices, which are an integral part of nursing education, create serious stress especially in first year nursing students. It is important to control the pre-clinical stress that nursing students experience. This study aimed to examine whether breath therapy is effective on the pre-clinical experience stress levels of first year nursing students.

Methods: Semi-experimental in single group pre- post-test study design. 42 nursing first year students were included in the study. Before the application, Student Information Form, Visual Analog Scale and Pagana Clinical Stress Questionnaire were applied to all students. Then 30 minutes by expert researcher. breath therapy was applied and questionnaires were applied again. This process is performed once a week for a total of 3 times 30 minutes. repeated as.

Results: The average age of the students was $19.13 \pm .92$. According to VAS, the stress level experienced by the students before the clinical practice was 6.77 ± 1.64 , whereas it was determined as 2.64 ± 2.06 after the third application. The mean clinical stress score before the application was 28.60 ± 10.13 and after the third application it was 16.37 ± 9.08 . When the mean scores of the Clinical Stress Questionnaire of the students were compared separately according to the measurements, it was seen that their stress decreased in all measurements made before the application of breath therapy.

Conclusion: With this study, conscious breathing therapy application was found to be effective in reducing the stress of nursing students who will go to the clinic for the first time.

Keywords: Breath therapy, mindfulness, clinical stress, nursing students.

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INTRODUCTION

Theoretical knowledge and clinical experience are combined in nursing education programs, and they are complementary and indivisible parts of nursing education (Bayar et al. 2009; Sharif and Masoumi 2005). Clinical practice areas provide students opportunities to observe role models, to practice alone by taking responsibility, to act according to clinical picture of the patient, to make decisions and to work as a team member (Bayar et al. 2009; Çalışkan and Akgöz 2005). It also improves psychomotor skills that underlie roles that enable students to socialize (Sharif and Masoumi 2005; Şendir and Acaroğlu 2008). However, many studies show that in clinical practice, students get stress due to difficulty of using the theoretical knowledge they learned, as well as the difficulty in adaptation to the hospital, lack of clinical experience, unclear expectation of trainer, unfamiliar and unusual areas, time pressure, lack of personal knowledge and skills, taking patient responsibility in clinical practices as well as lack of motivation and coping skills (Sheu et al. 2002; Jimenez et al. 2010; Martos et al. 2011). In addition, in studies conducted to determine the stress level of nursing students, it was reported that clinical practice increases the stress level of students, and the clinical stress is experienced intensely on the first day of clinical practice (Sheu et al. 2002; Wang et al. 2011; Atay and Yılmaz 2011; Arabacı et al. 2015; Mankan et al. 2016). In the study of to determine stress levels of nursing students in five countries, it was found that the clinical practice increases the stress levels of students as a universal problem (Burnard et al. 2008). It was stated that especially nursing first year students suffer from stress due to environment and the lack of professional knowledge and skills (Pagana 1988; Sheu et al. 2002; Karaca et al. 2017). The stress that experienced causes inability to meet the expectations of patient, the deterioration in harmony of hospital functioning, fear of giving false information, difficulty in building up relations with healthcare professionals, decrease on the ability to cope with stressful situations, poor social relations and anxiety to make mistakes in hospital procedures. This can negatively affect the student's clinical performance (Sheu et al. 2002; Sharif and Masoumi 2005; Melincavage 2011). It was stated that the nursing students who are exposed to long term and uncontrollable stress are negatively affected by their state of health, and their academic success decreases by weakening of thinking and decision making skills (Sheu et al. 2002; Edwards et al. 2010; Altioğ and Ustun 2013). Studies report that using coping strategies effectively protects health.¹⁸ However, the studies conducted with nursing student in our country and in abroad show that students cannot use effective coping strategies against stress (Sheu et al. 2002; Chan et al. 2009; Karaca et al. 2017; Güler and Çınar 2017). Therefore, it is important to identify the stress level and stress-causing factors that experienced by students, especially first year students, on the first day clinical practice, as well as to develop applications that will help students to control their stress in the clinical practices. One of the methods developed to cope with stress nowadays is conscious awareness-based (Mindfulness) interventions (Carmody et al. 2009; Demir

2015). In this awareness practice which is based on meditation techniques applied in the East, attention is concentrated on breathing, sensation of body, thoughts and emotions (Kabat-Zinn 2003). Mindful breathing exercise is essential in cultivating mindful attitudes. Calm breathing which is a skill meant to be developed through mindfulness practices is one of the few skills that people know as new-borns yet forget as they grow (Öksüz 2018). During breathing, state of being in the moment is tried to be felt and make it focal point. Focusing on breathing is the basis of awareness-based practices, and it is done in order to increase individual awareness, self-control and reduce the effects of stress factors in individuals (Schonert-Reichl and Lawlor 2010). In the study of Shapiro S.L. et al. (2005), it was reported that conscious awareness stress reduction program improves the ability of cope with factors that cause stress in one's life by increasing self-control and flexibility in emotions and thought (Shapiro et al. 2005). In their study with nurses, Mackenzie et al. (2006) reveal that practices involving awareness-based practices reduce the stress and professional attrition of nurses (Mackenzie et al. 2006). In the another study, the three-week conscious awareness program was found to be effective in reducing anxiety and stress of university students (Call et al. 2014). Therefore, it is significant to be taught and made conscious awareness-based practices in order to help students relieve stress, anxiety and negative thoughts. In this study, it was aimed to examine whether the application of breathing therapy is effective on the stress levels of first year nursing students especially before the first clinical experience.

MATERIALS AND METHODS

Study Design

This research was conducted between February- April 2020 with first year students who are studying in the nursing department of a foundation university located in Istanbul/Turkey as quasi-experimental in one group pre-test post-test study design.

Sample and Participants

The students who were 18 years and older, did not have any communication problems, had not received any training about breathing therapy, and never had clinical practice before were included into the study.

The number of samples was determined in the GPower 3.1 software by taking into account the values of data that was obtained from a similar study in the literature.²⁸ The sample size was calculated to achieve a power of 90% at a 0.05 level of significance. The power calculation indicated that the required sample size was 38 students.

Data Collection

Measurements/Instruments

Study Information Form, Visual Analog Scale (VAS) for Stress Level, Pagana Clinical Stress Questionnaire were used in this study.



Study Information Form: There are total of 15 questions including the state of readiness for clinical practice, feelings and thoughts about clinical practice and some socio-demographic characteristics of students (age, gender, place of residence, marital status, educational status, employment status). It was prepared by researchers in the line with the literature.

Pagana Clinical Stress Questionnaire: Clinical Stress Questionnaire (CSQ) is five-point Likert-type questionnaire developed by Pagana in 1989 which allows to measure the initial degrees of stress of nursing students (which may involve threat and struggle) that is experienced on the first day of clinical practice. Each question is examined in 5 grades; it is requested to mark one of the options as 0-“none”, 1-“a little”, 2-“moderate”, 3-“much”, 4-“too much”. Minimum “0” and maximum “80” points can be obtained from the survey. The low score means that the stress level is low, and high score equals that stress level is high. The scale can be applied in 5-6 minutes. The Turkish validity and reliability of the Clinical Stress Questionnaire was conducted by Şendir and Acaroğlu (Şendir and Acaroğlu 2008).

Procedure

Volunteer students were informed about the study, and their written consent was obtained. Student Information Form, Visual Analog Scale (VAS) for Stress Level and Pagana Clinical Stress Questionnaire was applied to all students before the practice. Then, 30 minutes of mindful breathing exercise was applied by an expert researcher who has internationally valid certificate in Mindfulness Based Stress Reduction Program. Right after practice, Visual Analog Scale (VAS) for Stress Level and Pagana Clinical Stress Questionnaire was applied to all students. One week after the first mindful breathing exercise application, the second application was performed with the same method again and the third breathing application was carried out a week after the second application. After each practice, Visual Analog Scale (VAS) for Stress Level and Pagana Clinical Stress Questionnaire were applied to all students. All students received 30 minutes of breathing exercise once a week, three times in total. After the first application, daily breathing exercises were given as homework to students by researchers, and a weekly form was given to write down what they were feeling, 14-day form in total.

Intervention

In the all sessions of breathing practice, students were informed by the researcher about the mindfulness process

and its content. Information about how breathing can relieve the stress with its calming effect on the body and mind was given. They were asked to sit comfortably (loosening the belt, buttons, taking off the shoes) and close their eyes to start breathing exercise. They were suggested to leave aside their future concerns and judgement of themselves, to focus on the present and here. Later on, body scanning meditation was taught to students. Students were asked to focus primarily on their breathing and then on each part of their body. They were told to focus on their body comprehensively and transiently in order to improve both their concentration and mental flexibility about their body. It was told to focus their attention gradually to each part of the body, combine their breathing and body awareness and then feel their breathing in the every part of the their body. During the breathing exercises, students were told to focus on their emotions, feel their emotions and notice them. The “TV screen” metaphor was used to ensure group members to keep distance themselves from their thoughts. They were asked to visualize a situation that upset them, causing stress and tension recently. When they felt that negative thoughts caused negative emotions, stress and tension, they were asked to envision a TV screen, and think that they were watching the incident that they experienced from TV screen. Then, they were asked to open their eyes by taking three deep breaths.

Data Analysis

In the statistical evaluation of the data, the averages, percentages, frequencies and mean values (min-max) were calculated; in determining the difference between groups, Student-T Test, Wilcoxon Signed Ranks Test, Paired Sample Test, one-way analysis of variance Anova were used. All results were considered meaningful at $p < .05$ and a confidence interval of 95%. All results of measurements were obtained by another researcher blinded to group allocation.

RESULTS

When the socio-demographic characteristics of the students were examined, it was found that average age was $19.13 \pm .92$, most of them were female ($n=39$, 86.7%) and not working ($n=39$, 86.7%). It was reported that most of the students were ready for first clinical practice, were not afraid to nurse patients, afraid of negative clinical experience, they feel excitement and mixed feeling towards clinical practice (Table 1.).



Table 1 The Socio-demographic characteristics of the students

Characteristics		n	%
Gender	Female	39	86.7
	Male	6	13.3
Age		Min:18 Max:21	$\bar{X}=19.13\pm.92$
Economic Condition	Income and expense is equal	23	51.1
	Income higher than expense	20	44.1
	Income lower than expense	2	4.1
Employment Status	Working	6	13.3
	Not working	39	86.7
Ready to clinical practice	Yes	32	71.1
	No	13	28.9
Feeling that have sufficient theoretical knowledge for clinical practice	Yes	19	42.2
	No	26	57.8
Fear of nursing patients	Yes	12	26.7
	No	33	73.3
Is there any application that you are afraid of to do in the clinic	Yes	29	64.4
	No	16	35.6
Are you afraid of negative clinical experience?	Yes	37	82.2
	No	8	17.8
What is your feeling about clinical practice?	Fear	1	2.2
	Excitement	15	33.3
	Anxiety	7	15.6
	Comfortable	2	4.4
	Mixed Feelings	20	44.4

min: minimum value, max: maximum value

It was determined that the stress levels that experienced by the students before the clinical practice according to VAS and stress levels in measurements after breathing therapy

practice were decreased at a statistically significant level ($p<0.001$) (Table 2.).

Table 2 Stress mean scores of students before and after the application according to VAS

Stress Level	Before VAS	After First Application VAS	After Second Application VAS	After Third Application VAS	F*	p
	$\bar{X} \pm Sd$	$\bar{X} \pm Sd$	$\bar{X} \pm Sd$	$\bar{X} \pm Sd$		
VAS	6.77±1.64	5.20±2.26	3.13 ±1.98	2.64±2.06	42.199	.000

F*: In repeated measurements Anova, $p<0.05$, Sd: Standard deviation

When the mean scores of Clinical Stress Questionnaire before the clinical practice were compared to mean scores of Clinical Stress Questionnaire in the measurements after the

breathing therapy application, it was determined that the clinical stress score averages of students decreased at a statistically significant level ($p<0.001$) (Table 3).

Table 3 Clinical stress score means before and after the application

Scale Total Score Averages	Before CSA	After First Application	After Second Application	After Third Application	F*	p
	$\bar{X} \pm Sd$	$\bar{X} \pm Sd$	$\bar{X} \pm Sd$	$\bar{X} \pm Sd$		
Clinical Stress Questionnaire	28.60±10.13	24.28±9.30	17.73 ±12.01	16.37±9.08	16.138	.000

F*: In repeated measurements Anova, $p<0.05$, Sd: Standard deviation



When the mean scores of the students' Clinical Stress Questionnaire were compared separately according to measurements, it was found that their stress reduced in all measurements that made according to the state before the breathing therapy practice ($p < 0.05$). In addition, there was a statistically significant difference between the stress score

means before the first application (24.28 ± 9.30) and the stress score means after second application (17.73 ± 12.01) ($p = 0.0001$). However, there was no significant difference between the stress score means of students after second application (17.73 ± 12.01) and the stress score means after third application (16.37 ± 9.08) ($p = 0.495$) (Table 4.).

Table 4 Comparisons of Clinical Stress Questionnaire mean scores by weeks

Before Stress $\bar{X} \pm Sd$ 28.60±10.13	After First Application $\bar{X} \pm Sd$ 24.28±9.30	t*	p
Before Stress $\bar{X} \pm Sd$ 28.60±10.13	After Second Application $\bar{X} \pm Sd$ 17.73 ±12.01	2.176	.035
Before Stress $\bar{X} \pm Sd$ 28.60±10.13	Third Application $\bar{X} \pm Sd$ 16.37±9.08	4.251	.000
After First Application $\bar{X} \pm Sd$ 24.28±9.30	After Second Application $\bar{X} \pm Sd$ 17.73 ±12.01	6.047	.000
After First Application $\bar{X} \pm Sd$ 24.28±9.30	Third Application $\bar{X} \pm Sd$ 16.37±9.08	3.827	.000
After Second Application $\bar{X} \pm Sd$ 17.73 ±12.01	Third Application $\bar{X} \pm Sd$ 16.37±9.08	4.544	.000
		.689	.495

*Paired Student t-Testi, $p < 0.05$, Sd: Standard deviation

DISCUSSION

With this study, it was examined whether mindful breathing exercise was effective in reducing first clinical experience stresses of nursing students or not. As a result of this study, firstly students reported that they were ready for clinical practice, however, they were afraid of having negative experience, and they felt excitement and mixed feelings about clinical practice (Table 1.). Similar to our research, in their studies Sharif and Masoumi (2005) reported that students experience thoughts intensively such as clinical environment is stressful for them, they are afraid of harming a patient/individual, they have the feeling that they do not belong to the team, making mistakes, hurting a patient, encountering with negative reactions, and they experienced stress due to the decrease in their self-confidence. In their study, Atay and Yılmaz (2011) also identified that students felt ready for clinical practice, they found the theoretical knowledge that is given before clinical practice sufficient, and the negative experience that they feared to do in clinical practice is as harming the patient. The fact that our results are this way can be attributed to that students will see the clinical environment for the first time and that they will go to the clinic after receiving just two weeks of theoretical knowledge, and that they think their knowledge has not yet

sufficient. In addition, when the VAS results of students before going to clinic were examined, it was seen that the stress levels were slightly above the moderate in a way that supporting these results. However, it was determined that the mean scores of clinical stress questionnaire before students went to the clinic were relatively lower compared to other studies (Burnard et al. 2008; Atay and Yılmaz 2011; Karagözoğlu et al. 2013; Taşdelen and Zaybak 2013). We can attribute the different results to that they were applied in the laboratory as if they were in the hospital environment before going to practice, number of students was in appropriate number, and practice was performed with each student as one to one in the laboratory environment. In our study, it is seen that clinical stress score averages of students decreased at a statistically significant level when the mean scores of Clinical Stress Questionnaire before the clinical practice were compared to mean scores of Clinical Stress Questionnaire in the measurements after the breathing therapy application ($p < 0.001$) (Table 3). In the same way, when the mean scores of the students' Clinical Stress Questionnaire were compared separately according to measurements, it was found that their stress reduced in all measurements that made according to the state before the breathing therapy practice ($p < 0.05$). In addition, there was a statistically significant difference between the stress score



means before the first application (24.28 ± 9.30) and the stress score means after second application (17.73 ± 12.01) ($p=0.0001$). However, there was no significant difference between the stress score means of students after second application (17.73 ± 12.01) and the stress score means after third application (16.37 ± 9.08) ($p=0.495$) (Table 4.). In their studies where they examined the effect of daily conscious breathing therapy on students' exam anxiety, Cho, H., et al. (2016) found that breathing therapy practice reduced anxiety, and it was effective on positive thoughts. When other studies were examined, it was reported that the applied breathing therapy to patients in palliative care and to their families reduced distress (Beng et al. 2016), and proper breathing training was effective in reducing dialysis anxiety on patients that undergo haemodialysis therapy due to chronic kidney failure (Demirbilek et al. 2019). In his study that conducted with the participation of 16 students in order to determine the effects of conscious awareness-based cognitive therapy program on anxiety levels of university students, Demir (2017) observed that the application of it caused to reduce the anxiety levels of students. In many studies on conscious awareness-based practices, positive effects such as emotion regulation, increased empathy ability and reduced reactivity, increased cognitive flexibility, and improved personal and interpersonal relationships were spotted (Cahn and Polich 2006; Lutz et al. 2008; Davis and Hayes 2011). Therefore, it can be considered that breathing therapy will contribute students firstly to become aware of the factors that cause stress in order to cope with stress, and then to raise awareness towards stress with many other coping techniques that she/he developed and to make it manageable and controllable. Thus, while nursing students contribute to both their physical and mental health, they can display a more sensitive, harmonious and consistent behaviour towards their environment. Another positive attitude that adopted by nursing students via this study was that they provide themselves self-control by continuing this practice every day regularly. The students wrote what happened in their bodies and their minds in these diaries that they filled at home. In these diaries, it was found that students not only focused on changing their negative thoughts but also they noticed their feelings and thoughts. In the study of Cho, et al. (2006) that they examined the effects of daily conscious breathing therapy on students' exam anxiety, the results are also similar to our results. Conscious awareness-based practices allow individuals to realize that their thoughts are just a thought, and their feelings are just a feeling. It was stated that individuals' awareness of these thought that they are similar to other individuals' thoughts and feelings will prevent them from their judgemental attitudes and negative focus towards themselves (Brown and Ryan 2003; Zvolensky et al. 2006). When the notes that returned by writing at home by students were examined, a significant part of students stated that realizing the presence of individuals with similar problem both surprised and relieved themselves. As one student said, "Before the program, I did not know there were so many people that thinking like me. It was a relief to know that there are people that experiencing similar things to what I have experienced, and thinking and feeling like me" shows that awareness has

been raised also in this practice process. It can be claimed in this study that students became aware of their feelings and thoughts about stress, and they developed the ability to effectively cope with these emotions. The examining the effectiveness of breath therapy towards stress situations in the first clinical practice experience in only nursing students is among the limitations of this study. Evaluating stress only with the VAS and Clinical Stress Questionnaire, accepting student's testimony as true and not being performed clinical examination by a psychologist are also another limitations of the study.

CONCLUSION

With this study, it was found that the mindful breathing exercise was effective in reducing the stress of nursing students who will experience clinic for the first time. It seems that interest in conscious awareness-based therapies has increased in Turkey recently; however, the insufficiency of studies on this issue that conducted in Turkey is limiting us to compare the results that we obtained. Therefore, it is recommended that this study should be carried out in other nursing student groups and with a larger sample, experimental and control groups.

Contributions

The authors have confirmed that all of the authors meet the IC-MJE criteria for authorship credit as follows: (DY, ÖA, SÖ) making substantial contributions to the conception or design of the work; (SÖ, DY, ÖA) data collection, data analysis and manuscript writing; (ÖA, DY, SÖ) drafting the article or revising it critically for important intellectual content.

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Conflict of interests

None.

Ethical Considerations

In order to conduct the study, written ethics committee approval (20292139-050.01.05) from the Ethics Committee in Istanbul Sabahattin Zaim University.

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