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Araştırma Makalesi/ Research Article

COVID-19 Pandemi Sürecinde Ebelik Öğrencilerinde Progresif Gevşeme Egzersizleri ve Akran Desteğinin Kaygı ve Uyku Düzeyine Etkisi: Randomize Kontrollü Çalışma

Effects of Peer Support and Progressive Relaxation Exercises on Sleep Quality and Anxiety in Midwifery Students during COVID-19 Pandemic: A Randomized Controlled Trial

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Özet: Amaç: COVID-19 pandemi sürecinde ebelik öğrencilerinde progresif gevşeme egzersizlerinin ve akran desteği programının kaygı ve uyku düzeyleri üzerine etkisini belirlemektir. Gereç ve Yöntem: Randomize kontrollü bir müdahale çalışmasıdır. Çalışmaya ebelik bölümü öğrencileri (n=360) dâhil edildi. Dâhil edilme kriterlerine uyan 104 öğrenci, basit randomizasyon yöntemiyle Progresif Gevşeme Egzersizi (PGE) grubu (n=35), Akran Destek Programı (ADP) grubu (n=34) ve kontrol grubu (n=35) olmak üzere 3 gruba ayrıldı. PGE grubuna online gevşeme egzersiz programı verildi. ADP grubuna çevrimiçi bir akran destek programı verildi. Veri toplama araçları olarak; sosyo-demografik bilgileri içeren tanıtıcı bilgi formu, Spielberger'in Durumluk-Sürekli Kaygı Envanteri (D-SKE) ve Pittsburgh Uyku Kalitesi İndeksi (PUKİ) kullanıldı. Bulgular: Gruplar belirtilen özellikler açısından bağımsız ve homojen idi. PGE ve ADP gruplarının ön test Durumluk Kaygı Envanteri (DKE) (sırasıyla, 46,57±5,41; 45,26±4,81) ve PUKİ (sırasıyla, 8,86±2,48; 8,91±2,31) puanları açısından istatistiksel olarak anlamlı farklılık yoktu (p>0,05). PGE ve ADP gruplarının son test DKE (sırasıyla, 40,80±4,99; 38,47±7,15) ve PUKİ (sırasıyla, 6,49±3,49; 6,85±1,97) puanları, kontrol grubuna göre anlamlı düzeyde daha düşük tespit edildi (sırasıyla, F=9,749; P=0,000; $\chi 2$=15,382; P=0,000). Sonuç: PGE ve ADP ebelik öğrencilerinin COVID-19 pandemisi sırasında uyku kalitesini ve kaygı düzeylerini iyileştirmede etkili yöntemlerdir.

Anahtar Kelimeler: Akran desteği, Ebelik öğrencileri, Kaygı, Progresif gevşeme egzersizi, Uyku.

Abstract: Aim: This study aims to determine the effect of progressive relaxation exercises and peer support program on anxiety and sleep levels in midwifery students during the COVID-19 pandemic. Material and Method: This is a randomized controlled interventional study. The study consisted of midwifery students (n=360). One hundred and four students who met the inclusion criteria were divided into three groups, by simple randomization method: the Progressive Relaxation Exercise (PRE) group (n=35), the Peer Support Program (PSP) group (n=34), and the control group (n=35). The PRE and PSP groups were provided with online support for 30 minutes a day for 30 days. In addition, the PSP group was given 24/7support by peer trainers on necessary issues by sharing their contact information. Data were collected at the beginning and end of the study. The data collection tools included a descriptive data form with questions about socio-demographic characteristics, the Spielberger State-Trait Anxiety Inventory (S-TAI), and the Pittsburgh Sleep Quality Index (PSQI). Results: The groups were independent and homogeneous in terms of the specified characteristics. There was no statistically significant difference between scores of the PRE and PSP groups from the posttest administration of the State Anxiety Inventory (SAI) (respectively, 46,57±5,41; 45,26±4,81) and PSQI (respectively, 8,86±2,48; 8,91±2,31) (p>0,05). The scores of the PRE and PSP groups from the posttest administration of the SAI (respectively, 40,80±4,99; 38,47±7,15) and PSQI (respectively, 6,49±3,49; 6,85±1,97) were found to be significantly lower than those of the control group (F=9,749; P=0,000; $\chi 2$=15,382; P=0,000, respectively). Conclusion: PRE and PSP are effective methods for improving midwifery students' sleep quality and anxiety levels during the COVID-19 pandemic.

Keywords: Peer support, Midwifery students, Anxiety, Progressive Relaxation exercise, Sleep

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INTRODUCTION

Extraordinary developments are taking place in the COVID-19 pandemic, which has affected the whole world. Students continue their education online (Viner et al., 2020). In this process, they have faced many challenges. Low efficiency of online education, technical problems with computers and internet access, falling behind classes, fear of catching the virus, staying at home all the time, social isolation, and the presence of chronic diseases in the family cause high anxiety (Cao et al., 2020).

One of the most important problems that students have frequently experienced during the COVID-19 pandemic process is the sleep problem. Sleep plays an important role in the proper functioning of the body system. It is vital for immunity, cognitive function, learning, memory, pain, quality of life, tissue recovery, and cardiovascular system functions. During the pandemic period, students' sleep problems have increased and their sleep quality has decreased despite the extended time spent in bed. Anxiety caused by the COVID-19 pandemic affects sleep quality, too (Li et al., 2020). With the increase in students' anxiety and sleep problems during the COVID-19 pandemic process, the importance of non-pharmacological methods in the treatment of these disorders has increased, as well. Physical exercise, one of these methods, is a kind of practice that benefits the individual physically, mentally, and emotionally with a holistic approach (Tuncer et al., 2020). Among the exercise practices, relaxation exercises can increase focus and physical awareness by calming down the individual and reducing pre-sleep arousal and the mind and body exhaustion. With relaxation exercises, pulse and respiratory rate can slow down and muscle tension can be reduced (Siengsukon et al., 2017). In addition, exercise has an important role in reducing the risk of psychiatric comorbidities that can be seen following high anxiety and insomnia (Passos et al., 2011). Some studies in the literature have shown that PRE reduces anxiety and improves sleep quality (Liu et al., 2020; Marques et al., 2019; Jacobson, 1938).

Support services can also be an important option in students' coping with negativities during the online education process (Genç-Kumtepe et al., 2019). McLoughlin discussed support during distance education in three main groups, namely, social, task, and peer support (McLoughlin, 2002). In particular, it has been reported that peer support is important for both academic problems and adaptation to university life (Doğu-Kökçü, 2020). Peer support is defined as a natural and spontaneous process that provides both academic and psychosocial support established between people of close ages, who share an experience. It is frequently utilized among students during the university education process, which requires personal, social, and academic harmony (Horgan et al., 2017). While the literature suggests that peer support is a preferred support mechanism among young people, it is not known whether this support system has an effect on anxiety and sleep in midwifery students.

Due to the nature of the pandemic and its effects on students' anxiety and sleep levels, it is important to develop an up-to-date understanding of these common problems. We think that it is important to examine the effect of Progressive Relaxation Exercise (PRE) and Peer Support Program (PSP) on anxiety and sleep levels of midwifery students. Reflecting on these results, the present research was planned to determine the influence of PRE and PSP on midwifery students' sleep and anxiety levels during the COVID-19 pandemic.

MATERIAL AND METHOD

Study design

This is a randomized, controlled intervention trial. It was carried out according to CONSORT guidelines (CONSORT, 2010) between February 12 and March 28, 2021 with students who were studying midwifery at a state university during the COVID-19 pandemic in Turkey.

Randomization

Three hundred and sixty students from the midwifery department made up the population of the study, and the sample consisted of three hundred and thirteen students that agreed to join the study. We excluded some subjects from the study according to the exclusion criteria. The remaining one hundred and forty-four subjects were randomly divided into groups as PRE, PSP, and controls through simple randomization by assigning consecutive numbers to them via computer software (https://www.randomizer.org/). Accordingly, forty-eight students were assigned to the PRE group, forty-eight to the PSP group, and forty-eight to the control group. After the simple randomization step, 8 students from the PRE group, 10 from the PSP group, and 12 from the control group, who did not want to continue, were excluded from the study. During the follow-up period, 3 students from the PRE group and 2 students from the PSP group were excluded because they did not achieve 80% attendance. Since five subjects (two, PRE group; two, PSP group; one, control group) were unavailable during the data analysis stage, their final measurements could not be made, and therefore they were excluded. The study was completed with a total of 104 students, including 35 in the PRE group, 34 in the PSP group, and 35 in the control group (Figure 1). The study consisted of students agreeing to join the research and meeting the criteria of inclusion.

Inclusion criteria

The study was made up of students who did not have a history of addiction, did not have sleep apnea, musculoskeletal, cardio-pulmonary, or psychiatric disorders, and did not use drugs, cigarettes, or alcohol. The absence of these diseases and addiction was based on students' self-reports. Students who had a State Anxiety Inventory (SAI) score of >36 (anxiety) (Spielberger, 2010; Öner & Le Compte, 1985) and a Pittsburgh Sleep Quality Index (PSQI) score of >5 (poor sleep quality) were included in the study (Buysse et al., 1989; Ağargün et al., 1996). SAI and PSQI scores were evaluated by the researchers before starting the study.

Exclusion criteria

Students who did not volunteer to join the research and did not meet the criteria of inclusion were not involved in the research. Exclusion criteria: Students who had sleep apnea, musculoskeletal, cardio-pulmonary, or psychiatric diseases, and had a history of drugs, smoking, and alcohol were not included in the study. The presence of these diseases and addiction was based on students' self-reports. Students who had an SAI score of ≤36 (no anxiety) (Spielberger, 2010; Öner & Le Compte, 1985), and a PSQI score of ≤5 (good sleep quality) were not included in the study (Buysse et al., 1989; Ağargün et al., 1996). SAI and PSQI scores were evaluated by the researchers before starting the study.

Criteria for terminating the study for the participants

The study was terminated if the mother did not achieve 80% attendance.

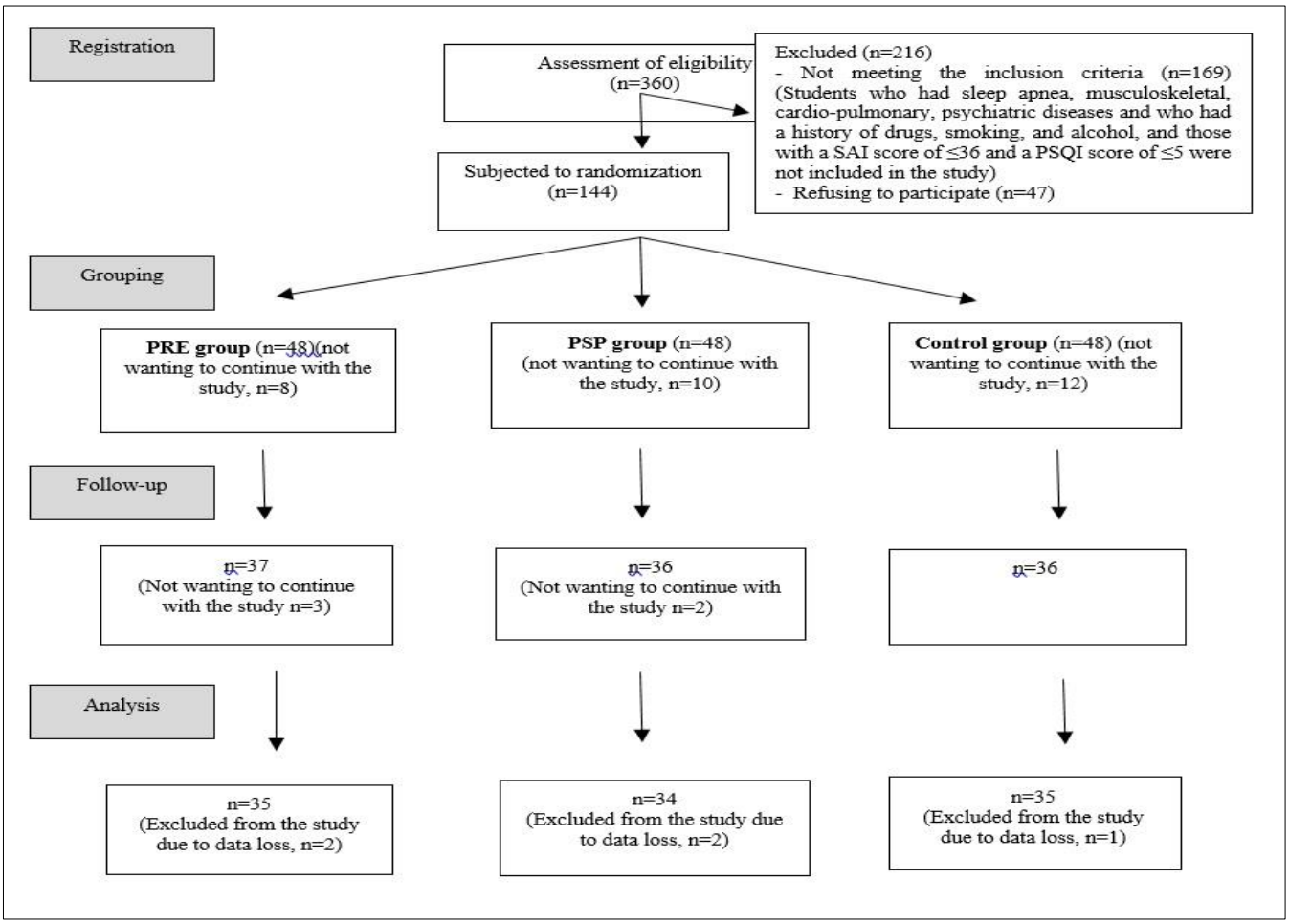

Figure 1. CONSORT flow chart.

Data collection tools

Data collection tools included the State-Trait Anxiety Inventory (S-TAI), which was developed by Spielberger, the Pittsburgh Sleep Quality Index (PSQI), and a descriptive information form designed to collect socio-demographic information.
S-TAI: This inventory was developed by Spielberger et al. in 1970, and its Turkish reliability and validity study was conducted by Öner and Le Compte in 1985. It has two subscales, namely state and trait anxiety, each consisting of 20 questions. State Anxiety; It is the anxiety that arises when faced with a dangerous, undesirable situation. Trait Anxiety, on the other hand, is anxiety that exists even when there is no objective cause and is disproportionately long-lasting and severe when there is such a cause. The scores that can be obtained from the inventory range between 20 and 80 and are interpreted as follows: ≤36, no anxiety; ≥37 and ≤42, mild anxiety, and ≥43, severe anxiety. Individuals with a score of >60 on the scale need expert help.
PSQI: Buysse et al. developed this scale in 1989. The internal consistency of the scale (Cronbach's alpha = 0.80) and its test-retest validity and reliability were evaluated adequate. The score on the total PSQI varies between 0 and 21. A score of ≤5 is evaluated to show good sleep quality. The coefficient showing internal consistency was reported to be 0.80 in the Turkish reliability and validity study conducted by Ağargün et al., (1996).

Procedures

First, all 3 groups filled out the questionnaires as a pre-test application. At the end of 30 days, the

groups filled out the questionnaires as a post-test. It took approximately 10-15 minutes to fill out the questionnaires. Midwifery students included in the study were contacted via an online survey link. No blinding procedure was performed.

Intervention groups

PRE group: The importance of the exercise and how it should be done were explained by the researcher Mixed teaching methods, including lecturing, demonstration, question-answer, and discussion were, used as education methods. The sessions were carried out online by a researcher who is an expert in the field of PRE for 30 minutes every day between 21:00 and 21:30 before bedtime for 30 days.

PSP group: A researcher and peer tutors met students in an online session for 30 minutes every day between 21:00 and 21:30 before bedtime for 30 days. These sessions focused on academic problem solving and academic encouragement of students. In addition, peer tutors and students shared their contact information and continued their sharing by talking on the phone and messaging in the chat group 24/7.

Selection and education of peer tutors: 5 peers with strong communication skills and high academic achievement were selected among the 4th-year volunteer students. These 5 volunteers were selected among students who were not included in the sample, had an appropriate level of anxiety (anxiety score $\leq$36), and had good sleep quality (PSQI score $\leq$5). A theoretical and practical session was held with them. In these sessions, peer-supported education was explained and necessary information was given about its purpose and how it was performed.

Control group: The students who formed the control group through randomization were given information about the research, and then they submitted informed consent. Control group students were given the same questionnaire as a pre-and-post-test applied in the intervention groups, but no intervention was applied.

Ethics of the study

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study was approved by the Cukurova University Faculty of Medicine Non-Invasive Clinical Research Ethics Committee Unit (issue: 108/49; date: February 12, 2021) for the implementation of the study. Clinical trial registration has been obtained for this study (NCT05570773). The consent of the students included in the study was obtained via an online questionnaire. To protect personal privacy during these interactions, the identity of all mothers were concealed. Written and verbal permissions were obtained from the participants, stating that participation in the research was completely voluntary and that they could withdraw from the study whenever they wanted.

Statistical evaluation of data

Statistical analyses were performed using IBM SPSS Statistics for Windows Version 24.0 software package (Statistical Package for the Social Sciences, IBM Corp., Armonk, NY, USA). Frequency tables, descriptive statistics, and parametric methods for measurement values suitable for normal distribution were used in the interpretation of the findings. Consistent with parametric methods, the "Paired Sample-t" test (t-table value) was used to compare the measurement values of two dependent groups, and the "ANOVA" test (F-table value) method was used to compare the measurement values of three or more independent groups. Tukey test was used in the pairwise comparisons of the variables with significant differences for three or more groups since the variances were not homogeneous. Non-parametric methods were used for the measurement values that

did not show a normal distribution. Consistent with non-parametric methods, the "Wilcoxon" test (Z-table value) was used to compare the measurement values of two dependent groups, and the "Kruskal-Wallis H" test (χ2-table value) method was used to compare the measurement values of three or more independent groups. Bonferroni correction was employed for pairwise comparisons of variables that showed significant differences for three or more groups. "Pearson-χ2 crosstabs tables" were used to examine the relationships between two qualitative variables.

RESULTS

No statistically significant differences were found between groups and school year, age groups, family type, place of residence, income level, chronic illness in the family, daytime sleep, evening tea/coffee consumption, COVID-19 positive individual in the family, academic anxiety, the effect of home isolation, and anticipatory anxiety ($p>0.05$). The groups were independent and homogeneous in terms of the demographic characteristics (Table 1).

It was determined that all of the students in the PRE, PSP, and control groups had high levels of anxiety according to their Trait Anxiety Inventory (TAI) scores. The difference between groups regarding their TAI scores was not significant ($p>0.05$) (Table 2).

Table 1: Analysis of the relationships between groups and some characteristics.

Groups	PRE group (n=35)	PSP group (n=34)	Control group (n=35)	Statistical analysis*
Variables	**n %**	**n %**	**n %**	**Probability**
School year				
1	8 (22.9%)	7 (20.6%)	9 (25.6%)	χ^2=0.755
2	9 (25.7%)	10 (29.4%)	8 (22.9%)	p=0.933
3	9 (25.7%)	8 (23.5%)	10 (28.6%)	
4	9 (25.7%)	9 (26.5%)	8 (22.9%)	
Age groups				
≤19	5 (14.3%)	3 (8.8%)	8 (22.9%)	χ^2=4.940
20-21	20 (57.1%)	20 (58.8%)	13 (37.1%)	p=0.294
≥22	10 (28.6%)	11 (32.4%)	14 (40.0%)	
Family type				
Core	31 (88.6%)	32 (94.1%)	31 (88.6%)	χ^2=0.810
Extended	41 (1.4%)	2 (5.9%)	4 (11.4%)	p=0.667
Place of residence				
Rural	4 (11.4%)	4 (11.8%)	6 (17.1%)	χ^2=0.615
Urban	31 (88.6%)	30 (88.2%)	29 (82.9%)	p=0.735
Level of income				
Income<expenses	10 (28.6%)	11 (32.4%)	12 (34.3%)	χ^2=4.807
Income=expenses	25 (71.4%)	20 (58.8%)	19 (54.3%)	p=0.308
Income>expenses	0 0	3 (8.8%)	4 (11.4%)	
Chronic disease history in the family				
Yes	17 (48.6%)	17 (50.0%)	18 (51.4%)	χ^2=0.057
No	18 (51.4%)	17 (50.0%)	17(48.6%)	p=0.972
Daytime sleep				
Yes	12 (34.3%)	1029.4%)	8 (22.9%)	χ^2=1.121
No	23 (65.7%)	2470.6%)	27 (77.1%)	p=0.571
Evening tea/coffee consumption				
Yes				
No	35 (100.0%)	29 (85.3%)	31 (88.6%)	χ^2=5.232
	0 0	5 (14.7%)	4 (11.4%)	p=0.073
COVID+ individual in the family				
Yes	8 (22.9%)	5 (14.7%)	6 (17.1%)	χ^2=0.812
No	27 (77.1%)	29 (85.3%)	29 (82.9%)	p=0.666
Academic anxiety				

Yes	32 (91.4%)	34 (100.0%)	31 (88.6%)	χ^2=3.873
No	3 (8.6%)	0 0	4 (11.4%)	p=0.144
Home isolation				
Yes, it impacted	33 (94.3%)	34 (100.0%)	33 (94.3%)	χ^2=2.021
No, it did not impact	2 (5.7%)	0 0	2 (5.7%)	p=0.364
Anticipatory anxiety				
Yes	33 (94.3%)	34 (100.0%)	32 (91.4%)	χ^2=2.863
No	2 (5.7%)	0 0	3 (8.6%)	p=0.239

*"Pearson-χ2 crosstabs" tables were used to examine the relationships between two qualitative variables.

All students in the PRE, PSP, and control groups had high levels of anxiety according to their scores on the pre-test application of SAI. The scores obtained from the pre-test administration of SAI did not yield a statistically significant difference between the groups (p>0.05). However, the post-test SAI scores of the groups yielded a statistically significant difference (F=9,749; P=0.000).

Table 2. Comparison of TAI scores by groups.

Groups	n	TAI scores $\overline{X} \pm S.D.$	Statistical analysis* Probability
PRE	35	48.91±5.40	F=1.837
PSP	34	46.53±5.22	p=0.165
Control	35	48.20±5.26	

*"ANOVA" test (F-table value) statistics were used to compare three or more independent groups with normal distribution.

As a result of Tamhane paired comparisons made by considering that the variances were not homogeneous to determine which group the significant difference originated from, there was a significant difference between the control group and PRE and PSP groups. On the other hand, SAI scores did not yield a statistically significant difference between the intervention groups (p>0.05). The scores of the PRE and PSP groups obtained from the post-test application of SAI were significantly lower than those of the control group (Table 3; Figure 2).

Table 3. Comparison of SAI and PSQI scores by groups.

Groups	PRE (n=35) (1)	PSP (n=34) (2)	Control (n=35) (3)	Statistical analysis*
Variables	$\overline{X} \pm S.D.$	$\overline{X} \pm S.D.$	$\overline{X} \pm S.D.$	**Probability**
SAI				
Pre-test	46.57±5.41	45.26±4.81	45.06±5.59	F=0.842 p=0.434
Post-test	40.80±4.99	38.47±7.15	45.34±7.37	F=9.749 **p=0.000 [1,2-3]**
Analysis* Probability	t=4.803**p=0.000**	t=4.387**p=0.000**	t=-0.202p=0.841	
PSQI				
Pre-test	8.86±2.48	8.91±2.31	9.37±2.45	χ^2=1.175 p=0.556
Post-test	6.49±3.49	6.85±1.97	9.06±2.36	χ^2=15.382 **p=0.000**
Analysis* Probability	Z=-2.683 **p=0.007**	Z=-3.849 **p=0.000**	Z=-0.341 p=0.733	**[1,2-3]**

*"Paired Samples-t" test (t-table value) was used for comparison of measurement values of two normally distributed dependent groups. "ANOVA" test (F-table value) was used to compare three or more independent groups. "Wilcoxon" test (Z-table value) was used to compare measurement values of two non-normally distributed dependent groups. "Kruskal-Wallis H" test (χ2-table value) was used to compare three or more independent groups.

The difference between the pre-test and post-test SAI scores of PRE and PSP groups was significant (p=0,000, and p=0,000, respectively). The post-test SAI scores of the PRE and PSP groups were significantly lower than their pre-test scores (Table 3).

The difference between pre-test and post-test SAI scores of the PSP group was statistically significant (t=4.387; p=0.000). The scores of the PSP group

from the post-test application of SAI were significantly lower than their pre-test scores. The difference between the scores of the control group obtained from the pre-test and post-test application of SAI was not statistically significant (p>0.05) (Table 3).

The scores of all students in the PRE, PSP, and control groups on the pre-test application of PSQI indicated that the sleep quality of all groups was low. The scores of groups on the pre-test application of PSQI did not yield a significant difference (p>0.05). However, the scores of the groups on the post-test application PSQI yielded a statistically significant difference ($\chi 2$=15.382; P=0.000). As a result of paired comparisons made by using Bonferroni correction to determine which group the significant difference originated from, the difference between the control group and exercise and support groups was significant. The scores of intervention groups on the PSQI scores did not yield a significant difference (p>0.05). The scores of the PRE and PSP groups on the post-test application of PSQI were significantly lower than that of the control group. In other words, intervention groups had higher sleep quality according to their PSQI scores. The scores of the PRE group on the pre-test and post-test application of PSQI yielded a significant difference (respectively: Z=-2.683; p=0.007; Z=-3.849; p=0.000). The score of the PRE group on the post-test application PSQI was significantly lower than their pre-test score. The scores of the control group on the pre-test and post-test application of PSQI did not show a significant difference (p>0.05) (Table 3; Figure 2).

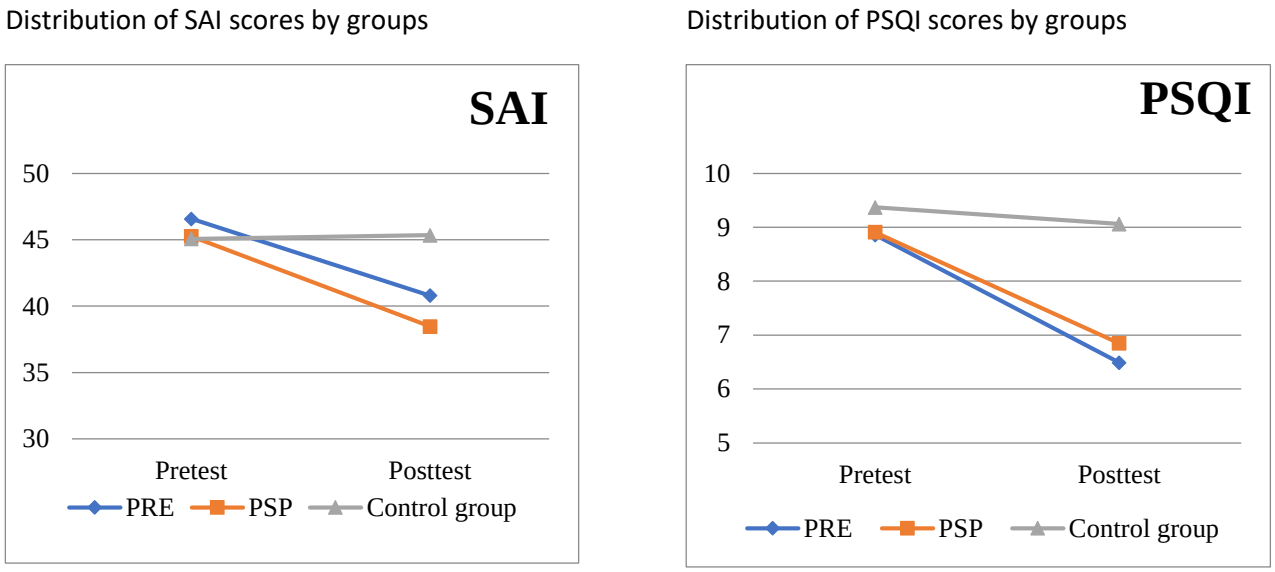

Figure 2. Distribution of SAI and PSQI scores by groups.

DISCUSSION

This research was planned to examine and compare the impacts of PRE and PSP on the sleep quality and anxiety levels of midwifery students in the COVID-19 pandemic. At the outset, all midwifery students in the intervention and control groups were found to have high levels of state and trait anxiety and low levels of sleep quality. The results indicated that the scores of the intervention groups on the post-test application of SAI and PSQI were lower than those of the control group and the difference was significant. The results indicated that PRE and PSP had an effect on increasing sleep

quality and reducing anxiety. In addition, the intervention groups did not have superiority over each other, but they had superiority over the control group.

The effect of PRE on students' anxiety and sleep quality levels

In this study, in which we examined the level of anxiety before and after PRE, midwifery students were found to feel less anxiety after the administration of PRE. The current study revealed that PRE was effective in reducing anxiety scores of midwifery students. Similar to our study, some studies in the literature show that PRE is effective in reducing the anxiety of nursing students (Zargarzadeh & Shirazi, 2014; Bostani et al., 2020). In their study on the effect of PRE on the anxiety levels of nursing students, Zargarzadeh and Shirazi (2014) reported that with muscle relaxation and the gradual elimination of tension, students' anxiety decreased significantly. Bostani (2020) and Merakou et al. (2019) stated that PRE reduced the level of anxiety. Korkut et al. (2021) stated that students who performed PRE were less anxious than those who did not. Gangadharan and Madani (2018) reported that nursing students experienced a significant decrease in their state anxiety after PRE. The current study confirmed that it also had an effect on reducing anxiety in midwifery students. PRE helps an individual to feel the difference between tension and looseness in their body in daily life, learn the effects of tension, and relax on their own. The main idea behind PRE is to teach individuals how to deliberately suppress their tension and ultimately reduce their anxiety levels. PRE provides more energy and more efficiency in daily activities (Jacobson, 1938). Increased energy and productivity may have been effective in reducing midwifery students' anxiety, as their perceptions of their capacity to adapt to daily stress factors also changed.

Post-test PSQI scores of the students in the PRE group were found to be significantly lower than their pre-test scores, and this result showed that their sleep quality increased. According to some researchers, multiple psychological factors, such as fatigue, anxiety, concerns, and depression play a role in the pathogenesis of sleep disorders (Kosmadakis & Medcalf, 2008). It has been reported that PRE reduces fatigue, anxiety, depression, perceived stress, and muscle tension and increases sleep quality related to these factors (Bastani et al., 2005; Rambod et al., 2013; Gao et al., 2014; Desouzart et al., 2015). Gao et al. (2014) stated that PRE applied in the accompaniment of therapeutic music improved the sleep quality of university students. PRE can increase pre-sleep arousal, reduce mental and body wear, and increase focus and physical awareness. With relaxation exercises, the pulse and respiratory rate can slow down and muscle tension can be reduced (Siengsukon et al., 2017). The results of our study also support the idea that PRE is an appropriate and comprehensive method to improve poor sleep quality.

The effect of PSP on students' anxiety and sleep quality levels

In our study, the post-test SAI scores of the PSP group were significantly lower than their pre-test scores. Tambağ (2020) stated that PSP had a strong effect on reducing students' anxiety levels. Similarly, in the study conducted by Doğan (2021), there was a relationship between peer support and the development of coping strategies in midwifery students. Improvement in coping strategies also reduces anxiety (Onieva-Zafra et al., 2020). In another study, emotional support from peers was shown to improve academic and mental health outcomes (Whiteman et al., 2013). These results are consistent with the results of our study. Peer support is a mutually beneficial agreement and an aid system based on mutual responsibility, which has basic principles in terms of the provider and the recipient. Peer support is a simultaneous movement towards autonomy and community building. This model is not thought-centered. It is a model that promotes diversity rather than homogeneity and recognizes individual strength (Mead et al., 2001). In the current study, it is thought that peer support that midwifery students received facilitated the

development of coping strategies and thus reduced anxiety.

The post-test PSQI scores of the PSP group were significantly lower than their pre-test scores. Support services can also be an important option for students to cope with the negativities in the online education process (Genç-Kumtepe et al., 2019). Peer support is frequently used among students during the university education process, which requires a multi-faceted harmony including personal, social, and academic harmony (Horgan et al., 2016). There is no study in the literature investigating the effects of PSP on the sleep quality of midwifery students. It has been mentioned that peer support can be used to increase the level of sleep quality during the pandemic period (Tasnim et al., 2020). Nyamute et al (2021) stated that a vicious circle, in which the pressure and increased workload in the educational environment made it difficult to cope and adapt, occurred in medical school students, and that the amount and quality of sleep therefore decreased. In the same study, it was reported that peer support broke this vicious circle and increased the duration and quality of sleep. Since similar problems brought by the pandemic period affected sleep quality in our study group, it is thought that sleep quality increased with a similar mechanism.

The relationship between PRE and PSP

In our study, the intervention groups were not superior to each other in terms of their level of anxiety. However, in a randomized controlled study, it was reported that PRE was more effective in reducing anxiety than PSP (Torabizadeh et al., 2016). Unlike our study, the interventions in this study were carried out face-to-face. In our study, since the exercises were performed online, the accuracy of the movements could not be evaluated as effectively as in the physical environment.

When the changes in the mean PSQI scores of the groups were compared after the intervention, it was seen that there was an improvement in PSQI scores in both of the intervention groups and statistically significant changes were observed in both groups compared to the control group. In our country, there is no study in which PRE was utilized to reduce the anxiety and stress levels of midwifery students. Therefore, the current study is considered to be original.

This study has some limitations. The first concerns the sample, which was all female and consisted of only midwifery students. Findings may differ in other student groups. Therefore, the sample group does not represent the whole university. The second limitation of the study is that it was limited to a single university, which limits generalization. In future studies, a larger sample can be studied because students' experiences and conditions in university life may differ across campuses and regions. The third limitation is that no intervention was conducted in the control group. The fourth limitation is that, in our study, connection problems were rarely encountered due to the online interventions. Although relaxation exercises are simple and easy-to-understand, the accuracy of the participants' movements during online training could not be evaluated as effectively as in the physical environment.

CONCLUSION

In conclusion, PRE and PSP are effective methods for improving midwifery students’ sleep quality and anxiety levels during the COVID-19 pandemic. In addition, although the mechanisms of action of these two methods are different, it has been observed that they have similar effects on improving anxiety levels and sleep quality. Further studies are needed to compare the long-term follow-up of both interventions and the effects of different interventions. It is anticipated that the findings of this study will guide potential pandemic/endemic conditions, such as the monkey pox epidemic.

Conflict of Interest

No potential conflict of interest was reported by the authors.

Ethics Committee Statement

Ethics approval was obtained from Cukurova University Faculty of Medicine Non-Invasive

Clinical Research Ethics Committee (issue: 108/49; date: February 12, 2021).

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