

Effect of Progressive Muscle Relaxation Exercise on Anxiety Reduction Among Nursing Students During Their Initial Clinical Training: A Quasi-Experimental Study

INQUIRY: The Journal of Health Care Organization, Provision, and Financing
Volume 59: 1–7
© The Author(s) 2022
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/00469580221097425
journals.sagepub.com/home/inq
 SAGE

Dalia Toqan, PhD¹, Ahmad Ayed, PhD¹ , Hasan Joudallah, PhD², Mosab Amoudi, PhD³, Malakeh Z. Malak, PhD⁴ , Imad Thultheen, PhD⁵, and Ahmad Batran, PhD^{1,6}

Abstract

The study is to examine the effect of progressive muscle relaxation exercise on anxiety of nursing students during their initial clinical experience. A quasi-experimental, pre-post study was carried out in the Arab American University. A convenience sample consists of 90 first-year nursing students were chosen. A progressive muscle relaxation exercise for five days per week was conducted on one group of nursing students. Students' anxiety was measured by S-anxiety scale (STAI Form Y-I) at pre and post the intervention. The severity of anxiety reduction was greater post the exercise ($t(89) = 30.783$, $P = .001$).

Keywords

anxiety, nursing, training, relaxation therapy, a quasi-experiment

What do We Already Know About This Topic?

Nursing students frequently suffer high levels of anxiety throughout clinical courses and are subjected to a variety of stressors during the initial clinical practicum.

How does your research contribute to the field?

To reduce anxiety, it is endorsed that stress reduction techniques based on this method be performed in nursing schools for nursing students earlier than their initial clinical training.

¹Faculty of Nursing, Arab American University, Jenin, Palestine

²Sport Science and Health, Physical Education and Sport, AN-Najah National University, Nablus, Palestine

³Faculty of Allied Medical Sciences, Arab American University, Jenin, Palestine

⁴Community Health Nursing, Faculty of Nursing, Al-Zaytoonah University of Jordan, Amman, Jordan

⁵Nursing Department, Faculty of Medicine and Health Sciences, An-Najah National University, Nablus, Palestine

⁶Faculty of Allied Medical Sciences, Department of Nursing, Palestine Ahliya University, Bethlehem, Palestine

Corresponding Author:

Ahmad Ayed, Faculty of Nursing, Arab American University, Rafedla, Jenin 0097, Palestine.

Email: ahmad.juma@aaup.edu



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and

Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

What are your research's implications toward theory, practice, or policy?

Given the findings of this study, it is recommended that relaxation training be taught and performed as nursing principles during the first semester of theory and practice.

Nursing schools can promote progressive muscle relaxation through nursing training courses in relaxation knowledge and techniques, including this type, for instructors and students to employ, and minimize anxiety in clinical settings.

Introduction

Nursing education is accomplished by utilizing knowledge and skills in clinical settings.¹ Clinical practice, an central aspect of nursing education, permits nursing students to acquire and develop their psychomotor abilities.² One of the main features shaping clinical education quality is students' exposure to and preparation for enrolling in the clinical training setting.³ According to several research, the clinical aspect of nursing education is the most demanding.^{4,5} Students in clinical training have significant levels of anxiety.⁶⁻⁹

Previous study described that nursing students in Indonesia faced stress and anxiety through clinical care.⁵ A Malaysian study revealed that clinical assignments were the leading source of anxiety among nursing students.¹⁰ Also, a study conducted in Saudi Arabia found that 50% of the pharmacy students experienced anxiety and stress during their undergraduate education.¹¹ According to study, extreme levels of anxiety can have adverse effect on learning and clinical accomplishment of medical students.⁸ This stress and anxiety might be ascribed to challenges in clinical practice as well as a scarcity of professional work experience.¹²

It is generally acknowledged that exposing nursing students to long-term and unmanageable stress has a negative impact on the development of their professional identity as well as their health, and it can also be considered to have an impact on patient outcomes.^{13,14}

Faculty and students must work together to create practical techniques to help nursing students avoid, minimize, or resolve psychological harm.⁸ Relaxation techniques can help students cope with academic stress.¹⁵ According to some studies, the PMR exercise should be used across all of nursing courses to encourage greater satisfaction and positive outlooks.¹⁶

According to the researchers' experiences in nursing clinical training, nursing students experience anxiety in their initial clinical training and their behaviors and performances alter.¹⁷ This alteration may have a detrimental impact on their training, advancement in patient care, and quality performance. The performance of a progressive muscle relaxation program, with which students are confronted in their first clinical learning setting, assists in the resolution of these issues and contributes to their professional development.^{18,19}

Given the significance of reducing nursing students' anxiety throughout their initial clinical training, strategies

such as progressive muscle relaxation exercise (PMR) may be beneficial in resolving this issue. However, according to the literature, no investigations have been done in Palestine upon this benefits of relaxation exercise on stress reduction in student nurses in their initial clinical training. As a result, the current study is to examine the effect of progressive muscle relaxation exercise on anxiety of nursing students during their initial clinical experience.

Methods

Design and Sample

The study was a pre and post, quasi-experimental design. The study was accomplished in 2019 in Arab American University. Ninety students were agreed to participate in the study. First-year nursing students, being in the area of practice as fixed on the first clinical training day, and agreeing to take part in the study were the inclusion criteria. A history of psychological illnesses, use of sedatives, being subjected to stressful circumstances in the prior three months, and missing more than two session meetings were all exclusion criteria. The flow diagram of the study seen in [Figure 1](#).

Procedure

One group of students obtained Jacobson's PMR exercise. These exercises were demonstrated in the nursing faculty for five following days each week. Firstly, the researchers approached the coordinator of the pediatric nursing course and told him to act a mediator in contacting the students. The coordinator's task was limited to tackling students and notifying them about the purpose of the study, as well as encouraging them to participate in the study. Also, in collaboration with administrator of the nursing department, an announcement about the study was posted on the electronic contact links and students' board. Then, the coordinator called the researcher to present information about the study to students who agree to participate in it. The researcher explained the purpose, duration, and content of the study, as well as what participants were expected to do. The researcher assigned the students who agreed to participate to ten groups randomly. Date and time of the intervention were communicated to each group. The participants were asked to complete the demographic data form and the STAI questionnaire two weeks before ingoing the clinical setting.

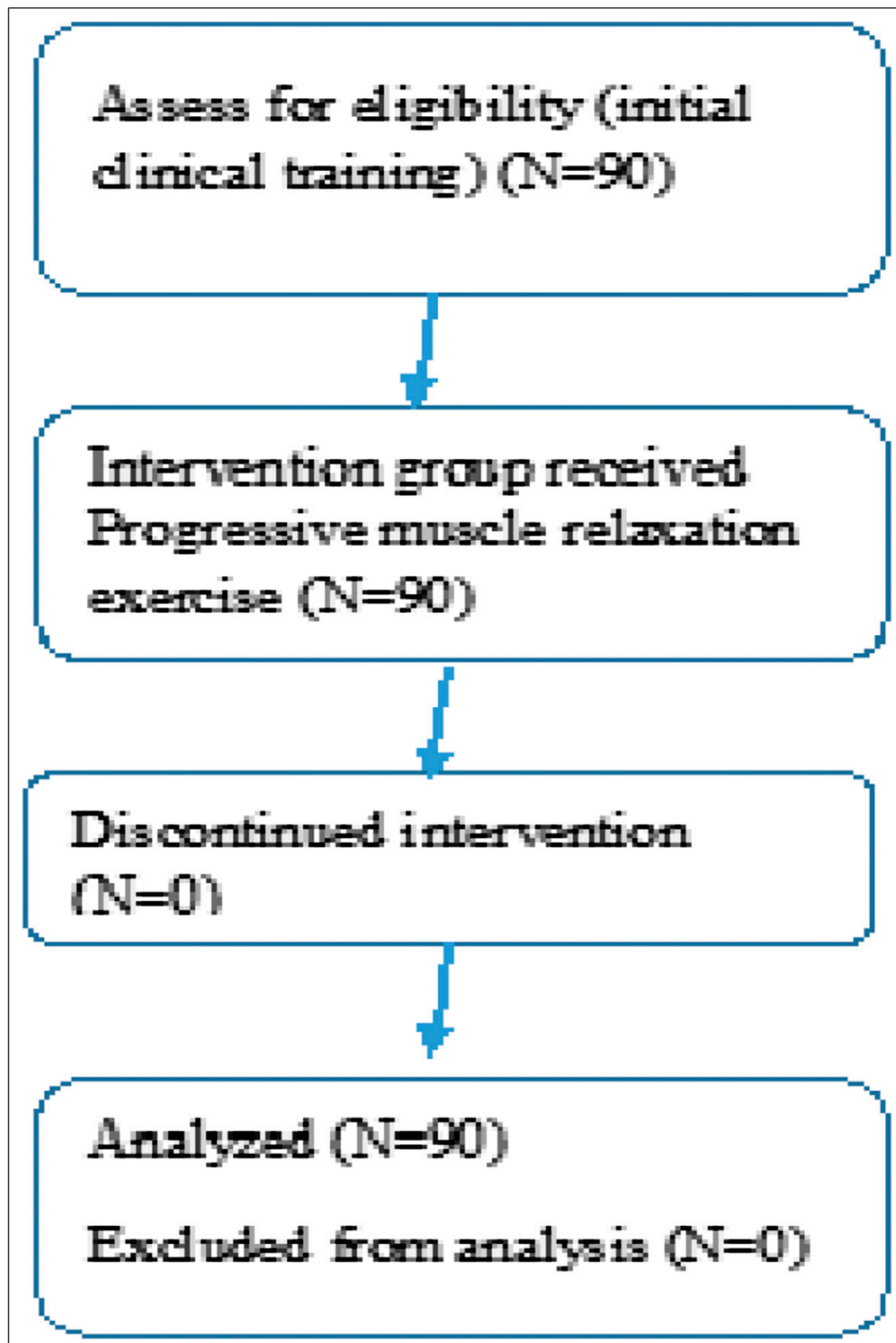


Figure 1. Flow diagram of the study.

Table 1. Progressive Muscle Relaxation (PMR) exercise.

Part of Body	Exercise
Hand & forearm	"Clench your hand into a fist"
Forehead	"Raise your eyebrows as much as you can, as if you were startled or shocked"
Upper arm	"Raise your right forearm and flex your bicep - "make a muscle"
Mouth and jaw	"Open your mouth, as wide as you comfortably can"
Eyes and cheeks	"Close your eyes very tightly"
Shoulder blades	"Pull back your shoulders as much as possible so that your chest sticks out"
Shoulders	"Tense your shoulder muscles while you raise them, as if to shrug them"
Neck	"Remain cautious when you flex the muscle. Stand straight and keep your eyes facing forward and then slowly bend your neck backwards (look up at the ceiling)"
Chest and stomach	"Take a breath, deep enough to fill your lungs"
Hips and buttocks	"Tense your buttock muscles"
Upper leg	"Flex both your thighs"
Lower leg	"To prevent cramps, do this gently and be careful. To stretch your calf muscles, draw your toes towards yourself"
Foot	"Bend down your toes"

The intervention was taken place in the nursing lab room. Notice cards were hung on the room's door, noise was reduced to the greatest extent potential, and the area was dim lighting.

Jacobson's PMR

Some studies have used Jacobson's PMR exercise.^{20,21} The intervention was carried out for 90 students in ten-person groups throughout five consecutive (45-minute) sessions each week. The researcher informed the students during the first session that the objective of the exercise was to assist them decrease muscular tension. He also encouraged the participants not to miss any meetings and to complete all of them. The researchers used PMR exercises in other sessions. The muscle groups addressed in this exercise: hand and forearm, forehead, upper arm, mouth and jaw, eyes and cheeks, shoulder blades, shoulders, neck, chest and stomach, hips and buttocks, upper leg, lower leg, and foot. These muscles must be engaged and relaxed in the order specified (Table 1).²² The participants felt relaxed on the floor while the researcher was using this exercise and they had been warned to dress appropriately in order to reduce tension. Additionally, the students were tasked to perform each session at home approximately 10-15 minutes every day. At the end of each meeting session, students were asked to continue practicing exercise at home. Again, the participants filled the STAI questionnaire for another time on the day they enrolled the clinical environment.

Instrument

First part: composed of demographic data of the nursing students which included age and gender.

Second part: composed of State-trait anxiety inventory (STAI): The S-anxiety scale (STAI Form Y-1) created by

Table 2. Demographic Characteristics of Participants (N = 90).

	n(%)	M(SD)
Age (years)		21.41(2.182)
Gender		
Male	21(23.3)	
Female	69(76.7)	

Spielberger was used in this study.²³ The questionnaire consists 20 items that assessed the students' beliefs at the moment they responded toward each item. Ten items accompanied the anxiety-present [3, 4, 6, 7, 9, 12, 13, 14, 17, 18], while the items accompanied the anxiety-absent were [1, 2, 5, 8, 10, 11, 15, 16, 19, 20]. On a 4-point Likert scale, participants' feelings were rated (1- not at all, 2- somewhat, 3- moderately, and 4-very much so). The anxiety-free items were rated from 4 to 1. The anxiety-present items were given a score of 1 to 4, with higher scores reflecting a great level of anxiety.²³ The overall score for the STAI Form Y-1 varied from 20 (low anxiety) to 80 (high anxiety). The reliability of the questionnaire was .86 and .95.²³

Ethical Consideration

After getting formal approval from Arab American University, all students who agreed to participate in the study signed informed consent. The purpose of the study was explained to the students. Furthermore, the participants were notified about the potential adverse effects of PMR, as increased levels of physiological activation, and fear of relaxing. They were told to call the researcher if any negative consequences happened. They can leave the study at any moment. Furthermore, confidentiality was respected.

Table 3. Comparison Between Anxiety Before and After PMR (N = 90).

Variable		n	M (SD)	Statistical Test	
				Paired t Test	P. Value
Anxiety score	Pre-exercise	90	2.75 ± .33	30.783	.001
	Post-exercise	90	1.22 ± .34		

P. value significant at the .05 level.

Results

Sample Description

A total of 90 nursing students participated in the study. The findings indicated that age of the participants was 21.41(SD = 2.182) years. Also, majority of the participants 69 (76.7%) were females (Table 2).

To compare the differences between students' anxiety before and after progressive muscle relaxation training, a paired t-test was used. The study revealed a significant difference between before and after the progressive muscle relaxation training ($t(89) = 30.8$, $P = .001$). The anxiety decreased after the program ($M = 1.22 \pm .34$) than before ($M = 2.75 \pm .33$), as seen in (Table 3).

Discussion

During clinical experience, students may be required to utilize items that they are unfamiliar with or have not seen before. Students experience anxiety as a result of a lack of knowledge and the necessity to communicate with patients, which is essential for the majority of nursing skills.²⁴ Mild anxiety promotes learning, but excessive anxiety inhibits it, resulting in poor performance.²⁴

The anxiety level was examined before and after the progressive muscle relaxation program in the current study. According to the findings, nursing students felt less anxiety after the exercise training. The current study revealed that PMR is effective in decreasing score of anxiety among nursing students.

In a study in which İnangil et al. assessed nursing students' anxiety prior to their first clinical experience, they found that the mean SAI score was 41.64 ± 10.23 , and the mean score of TAI was 32.07 ± 8.05 .¹⁷ In a similar study conducted by Açıksoz et al. assessed nursing students' anxiety prior the clinical experience, they found that the mean scores of SAI was (38.6 ± 7.64), and the mean score of TAI was (47.6 ± 6.27).²⁵ Also, Arabacı et al. found that the mean score of SAI was (41.05 ± 10.69), and TAI mean was (48.05 ± 5.00).¹⁸

Zargarzadeh et al. demonstrated that relaxation exercises had a positive effect on reducing students' test anxiety.²⁶ Also, Ahmadnejad and colleagues investigated the effects of relaxation techniques on decreasing anxiety among

students in a clinical experience and realized it to be helpful.²⁷ Heidari et al. revealed that teaching muscular relaxation techniques and gradually releasing tension, combined with biofeedback, significantly reduces students' anxiety.²⁸ According to Korkut et al., students who used muscular relaxation therapy were less anxious than those who did not.²⁹ Gangadharan and Madani reported that nursing students experienced a significant decrease in their state anxiety post PMR exercise.³⁰ Another study carried out by Patel reported that (40.0%) of the nurses had mild stress, (53.3%) had moderate stress, and (6.7%) had severe stress in pre-test, while (73.3%) of them reported mild stress and (26.7%) reported no stress in the posttest. The study stated that Muscle Relaxation technique can help nurses to reduce their stress levels.³¹ The current study is supported by Maharjan and Baby's findings of the effect of muscular relaxation therapy for academic and clinical stress. For ten consecutive days, progressive muscle relaxation was demonstrated. The study found that muscle relaxation technique was beneficial in lowering stress in nursing students.³²

Also, Dehghan-Nayery et al. indicated that PMR reduces stress and improves quality of life (QOL) among school-girls.³³ As a result, practicing PMR appears to be essential for students, particularly nursing students, because, according to one study, test anxiety reduces information processing speed.²⁶ The key idea behind PMR is to educate people how to deliberately suppress their tension and, as a result, decrease their level of anxiety. This strategy's key benefits in anxiety reduction and management include independence of practice, cost-effectiveness, and convenience. Nursing is stressful for nursing students, and the quantity of academic information they must study, and intense clinical setting, contribute to their anxiety. Individuals' perceptions of their capacity to adapt with daily stressors may change, and PMR exercise technique can be used to lower students' anxiety.

This study has some limitations that may have influenced the study's results. This study relied on self-reported questionnaires, which may increase the possibility of reporting bias due to personal interpretations of questionnaire items. Also, only age and gender from socio-demographic data were used and this was limiting factors. Furthermore, one methodological limitation of this study was that no control group.

Conclusion

The current study confirmed that PMR has an effect in decreasing clinical experience anxiety. As a consequence, it was recommended that prior to the initiation of clinical practice, nursing students be given relaxation techniques such as this approach to lessen anxiety.

Acknowledgments

The authors would like to express their thanks to the nurses who participated in the study

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs

Ahmad Ayed  <https://orcid.org/0000-0003-2164-8183>

Malakeh Z. Malak  <https://orcid.org/0000-0002-2412-2999>

References

1. Doyle K, Sainsbury K, Cleary S, et al. Happy to help/happy to be here: Identifying components of successful clinical placements for undergraduate nursing students. *Nurse Education Today*. 2017;49:27-32.
2. Oermann MH, Shellenbarger T. Clinical Education in Nursing: Current Practices and Trends. In: *Clinical Education for the Health Professions*. 2020:1-20.
3. Joolaei S, Amiri SR, Farahani MA, Varaei S. Iranian nursing students' preparedness for clinical training: A qualitative study. *Nurse Education Today*. 2015;35(10):e13-e17.
4. Jamshidi N, Molazem Z, Sharif F, Torabizadeh C, Najafi Kalyani M. The challenges of nursing students in the clinical learning environment: A qualitative study. *The Scientific World Journal*. 2016;2016:1846178.
5. McKenna L, Plummer V. Indonesian student nurses' perceptions of stress in clinical learning: A phenomenological study. *J Nurs Educ Pract*. 2013;3(5):56-65.
6. Bektaş H, Terkes N, Özer Z. Stress and ways of coping among first year nursing students: A Turkish perspective. *Journal of Human Sciences*. 2018;15(1):319-330.
7. Kostak MA, Mutlu A, Bilsel A. Experiences of nursing students in caring for pediatric cancer patients. *Asian Pac J Cancer Prev APJCP*. 2014;15(5):1955-1960.
8. Otim M, Al Marzouqi AM, Subu M, Damaj N, Al-Harbawi S. Prevalence of generalised anxiety disorders among clinical training students at the university of sharjah. *J Multidiscip Healthc*. 2021;14:1863-1872.
9. Al-Qerem W, Hammad A, Amawi HA, Jarab AS, Ling J. Anxiety and depression among pharmacy students before and during COVID-19 pandemic. *Trop J Pharmaceut Res*. 2021;20(5).
10. Ab Latif R, Nor MZ. Stressors and coping strategies during clinical practice among diploma nursing students. *Malays J Med Sci*. 2019;26(2):88-98.
11. Samreen S, Siddiqui NA, Mothana RA. Prevalence of anxiety and associated factors among pharmacy students in Saudi Arabia: a Cross-Sectional Study. *BioMed Research International*. 2020 Oct 26;2020.
12. Melaku Leta, Mossie Andualem, Negash Alemayehu. Stress among Medical Students and Its Association with Substance Use and Academic Performance. *Journal of Biomedical Education* 2015;2015:1-9. <https://doi.org/10.1155/2015/149509>
13. Altioğlu HO, Ustun B. The stress sources of nursing students. *Educ Sci Theor Pract*. 2013;13(2):747-766.
14. Sarafis P, Rousaki E, Tsounis A, et al.. The impact of occupational stress on nurses' caring behaviors and their health related quality of life. *BMC Nurs*. 2016;15:56.
15. Mahat G. Stress and coping: Junior baccalaureate nursing students in clinical settings. *Nursing forum*. 1998;33(1):11-19. Blackwell Publishing Ltd.
16. Manansingh S, Tatum SL, Morote ES. Effects of relaxation techniques on nursing students' academic stress and test anxiety. *J Nurs Educ*. 2019;58(9):534-537.
17. İnangil D, Şendir M, Kabuk A, Türkoğlu I. The effect of music therapy and progressive muscle relaxation exercise on anxiety before the first clinical practice in nursing students: A randomized controlled study. *Florence Nightingale Journal of Nursing*. 2020;28(3):341-349.
18. Arabacı LB, Korhan EA, Tokem Y, Torun R. *Pre-clinical and postclinical anxiety and stress levels of first-year nursing students and factors affecting them*. Ankara, Turkey: Hacettepe University Nursing Faculty Journal; 2015:1-16.
19. Dehkordi AH, Masoudi R, Tali SS, Frouzandeh N, Naderipour A, Pourmirzakhori R, et al. The effect of progressive muscle relaxation on anxiety and stress in nursing students at the beginning of the internship program. *Journal of Shahrekord University of Medical Sciences*. 2009;11(1):71-77.
20. Bostani S, Rambod M, Irani PS, Torabizadeh C. Comparing the effect of progressive muscle relaxation exercise and support group therapy on the happiness of nursing students: A randomized clinical trial study. *International Journal of Africa Nursing Sciences*. 2020;13:100218.
21. Jacobson E. Progressive relaxation. *Am J Psychology*. 1987;100(3-4):522-537.
22. Ramasamy S, Panneerselvam S, Govindharaj P, Kumar A, Nayak R. Progressive muscle relaxation technique on anxiety and depression among persons affected by leprosy. *Journal of exercise rehabilitation*. 2018;14(3):375-381.
23. Spielberger CD, Gorsuch RL, Lushene R, Vagg PR, Jacobs GA. *State-trait anxiety inventory (form Y)*, 77. Redwood City. CA: Mind Garden; 1983.

24. Aldridge MD. Nursing students' perceptions of learning psychomotor skills: A literature review. *Teaching and Learning in Nursing*. 2017;12(1):21-27.
25. Açıksoz S, Uzun Ş, Arslan F. Hemşirelik öğrencilerinde öz yeterlilik algısı ile klinik uygulamaya ilişkin kaygı ve stres durumu arasındaki ilişkinin incelenmesi. *Gülhane Tıp Dergisi*. 2016;58(1):129-135.
26. Zargarzadeh M, Shirazi M. The effect of progressive muscle relaxation method on test anxiety in nursing students. *Iranian journal of nursing and midwifery research*. 2014;19(6):607-612.
27. Ahmadnejad S, Monjamed Z, Pakravannejad M, Malekian A. The effect of relaxation training on first year nursing students anxiety in clinical setting. *Anxiety*. 2011;20:17.
28. Heidari A, Saedi S. The effect of relaxation and gradual stress removal accompanied by biofeedback on the anxiety of the students. *Journal of knowledge and research in Applied Psychology*. 2011;12(3):4-11.
29. Korkut S, Ülker T, Çidem A, Şahin S. The effect of progressive muscle relaxation and nature sounds on blood pressure measurement skills, anxiety levels, and vital signs in nursing students. *Perspectives in Psychiatric Care*. 2021;57: 1782-1790.
30. Gangadharan MP, Madani MA. Effectiveness of progressive muscle relaxation techniques on depression, anxiety and stress among undergraduate nursing students. *Int J Health Sci Res*. 2018;8(2):155-163.
31. Patel MP. A study to assess the effectiveness of progressive muscle relaxation therapy on stress among staff nurses working in selected hospitals at Vadodara City. *IOSR Journal of Nursing and Health Science*. 2014;3(3):34-59.
32. Maharjan G, Baby L. A study to assess the effectiveness of progressive muscle relaxation on stress among nursing students in a selected nursing college, Bangalore. *International Journal of Health Sciences and Research*. 2019;9(11):150-158.
33. Dehghan-Nayeri N, Adib-Hajbaghery M. Effects of progressive relaxation on anxiety and quality of life in female students: a non-randomized controlled trial. *Complementary therapies in medicine*. 2011;19(4):194-200.