ORIGINAL RESEARCH ORİJİNAL ARAŞTIRMA

DOI: 10.5336/nurses.2023-95277

The Effectiveness of Peer Coaching in the Skill Development of Nursing Students: The Experimental Study

Hemşirelik Öğrencilerinin Beceri Gelişiminde Akran Koçluğunun Etkinliği: Deneysel Çalışma

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This study was presented as an oral presentation at the International Gazi Health Sciences Congress, which was held online on December 15-17, 2021.

ABSTRACT Objective: The aim of this study was to determine the effect of peer coaching for basic nursing skills on the skill levels of nursing students. **Material and Methods:** The study, an experimental type, was conducted with 130 first-grade nursing students (n=180) of a state university. The data were collected using the personal information form, the Spielberger State-Trait Anxiety Inventory (STAI), Peer Support Scale (PSS), and the guides on blood collection and vascular access skills. **Results:** The mean age of the students was 18.90±0.94 years. No significant difference was found between students' pre-intervention individual characteristics and STAI and PSS scores (p>0.05). It was determined that there was a significant decrease in the STAI scores of the experimental group students after peer coaching (p=0.000). The scores of the students in the experimental and control groups from the guide on blood collection skills were 24 (20-25), 24 (20-25), respectively, and their vascular access skills scores were 23 (15-25), and 22 (18-25), respectively. No significant difference was found between the median scores of vascular access and blood collection of the students in the experimental and control groups (p>0.05). **Conclusion:** It was determined that the skill development of the students in both groups was high. The significant decrease in the STAI score of the students in the experimental group shows that peer support reduces anxiety levels. Furthermore, the lack of difference in terms of skill development between the students in both groups indicated that the skill training provided by peer coaches was as effective as the training provided by the instructors.

Keywords: Nursing education; peer group; clinical skills

ÖZET Amaç: Bu çalışmanın amacı, temel hemşirelik becerilerine yönelik akran koçluğunun, hemşirelik öğrencilerinin beceri düzeylerine etkisini belirlemektir. **Gereç ve Yöntemler:** Yarı deneysel tipte olan çalışma, bir devlet üniversitesinin hemşirelik bölümü birinci sınıfında okuyan 130 (n=180) öğrenci ile yapılmıştır. Veriler kişisel bilgi formu, Durumluk Kaygı Ölçeği (DKÖ), Akran Desteği Ölçeği (ADÖ), kan alma ve damar yolu açma beceri rehberleri kullanılarak toplandı. **Bulgular:** Öğrencilerin yaş ortalamaları 18,90±0,94 idi. Öğrencilerin girişim öncesi bireysel özellikleri ve DKÖ, ADÖ puanları arasında anlamlı farklılık saptanmadı (p>0,05). Deney grubu öğrencilerin akran koçluğu eğitimi sonrası DKÖ puanında anlamlı azalma olduğu saptandı (p=0,000). Deney ve kontrol grubundaki öğrencilerin kan alma beceri rehberi puanları sırasıyla 24 (20-25), 24 (20-25), damar yolu açma beceri puanları ise sırasıyla 23 (15-25), 22 (18-25) idi. Deney ve kontrol grubu öğrencilerin damar yolu açma ve kan alma puanları arasında anlamlı farklılık saptanmadı (p>0,05). **Sonuç:** Her iki gruptaki öğrencilerin beceri gelişimlerinin yüksek düzeyde gerçekleştirildiği belirlendi. Deney grubundaki öğrencilerin STAI puanlarındaki anlamlı düşüş, akran desteğinin kaygı düzeyini azalttığını göstermektedir. Ayrıca her iki gruptaki öğrenciler arasında beceri gelişimi açısından fark olmaması akran koçları tarafından verilen beceri eğitiminin öğretim elemanları tarafından verilen eğitim kadar etkili olduğunu göstermiştir.

Anahtar Kelimeler: Hemşirelik eğitimi; akran grubu; klinik beceri

The aim of nursing education, which requires the acquisition of knowledge and skills in cognitive, affective and psychomotor learning domains, is to enable students to develop the knowledge, skills and clinical reasoning that will enable them to develop a professional attitude and empathy in their future professional life.[1] Learning in nursing education includes laboratory practices and clinical practices after learn-

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Peer review under responsibility of Turkiye Klinikleri Journal of Nursing Sciences.

Received: 04 Jan 2023 ***Received in revised form:*** 22 Jun 2023 ***Accepted:*** 17 Jul 2023 ***Available online:*** 19 Jul 2023

ing the theoretical part of the course in the classroom environment.[1,2] The clinical practices performed after the completion of the theoretical and laboratory learning are a learning environment that includes real patients suitable for achieving the learning objectives.[2] The ability of students to provide quality and competent care to patients is achieved by integrating the knowledge and skills they have learned into clinical practice.[3] Students' gaining competence in pre-clinical skills can only be achieved in a comprehensive preparation and an appropriate skills training environment.[4] In this context, the importance of skills training performed in skill laboratories is of great importance.[5] Students are provided with opportunities to repeat the practices until they reach the desired level, ensure patient safety, develop communication skills and team understanding by attempting to create an environment similar to clinical practice areas in skill laboratories, and thus, it is aimed to increase their skill development.[6]

The acquisition of clinical skills is an important part of nursing students and is invaluable for student nurses.[7] Students transfer their theoretical knowledge to practical skills through clinical practice, which is a central part of nursing education.[8] However, from the students' point of view, the clinical practice setting is extremely stressful, and inadequate training and skill development may lead to decreased quality of care in the clinical setting, compromising patient safety, and even increased mortality and morbidity rates.[4,7,8] For these reasons, it is important for students to undergo a well-developed skill training before going into clinical practice.[4,7] However, when today's nursing education is examined, it is known that the number of students is increasing day by day and the number of instructors is insufficient, which prevents nursing students from performing their education at the desired level, gaining skills effectively, and causes the student to feel stressed and inadequate.[9,10] It is necessary to start using and evaluate different training methods before clinical practice in order to ensure that students have no problems and experience less anxiety in the clinical practice setting.[11] In the literature, it is observed that the effects of different learning methods such as web-based learning, learning with video games, and learning by simulation method on nursing education were investigated.[8,12] In this context, peer coaching is also considered one of the alternative education methods, the use of which is becoming increasingly important in the skill development of nursing students.[2,13]

Peer coaching is a collaborative teaching and learning strategy that provides mutual benefit to individuals and involves learning from each other.[14] Peer coaching method allows both the instructor students and the participating students to share the same basic knowledge and experience, and to explain the concepts in the simplest way, using an easy-to-understand language and in accordance with the level of the students.[2] Peer coaching takes place when people of similar social groups, who are not professional teachers, help each other learn and by doing so, and learn by themselves.[15] In the literature, it is reported that peer coaching is an effective behavior change strategy due to its advantages such as providing positive learning gains in cognitive, affective and psychomotor domains in nursing students, and eliminating the hierarchical relationship and power imbalance between the educator and the student.[13,16] The use of peer coaching in nursing education contributes to providing students with the opportunity to learn together, effective communication, critical thinking, cooperation, problem solving, self-confidence, competence in practice, and practice independently.[15,17] It has been reported that peer coaching is effective in better development of skills as well as making students ready for future nursing roles.[18]

This information indicates that the use of innovative and active participation of the students in order to facilitate learning and develop skills in nursing education will contribute to the skill development of nursing students. Accordingly, the study was carried out to evaluate the effect of peer coaching for basic nursing skills on the skill levels of nursing students.

The hypotheses of the study:

Hypothesis 1. The blood collection skill level of the students who receive peer coaching is as high as the students who receive traditional education.

Hypothesis 2. The vascular access skill level of the students who receive peer coaching is as high as the students who receive traditional education.

Hypothesis 3. The state-trait anxiety levels of students in the experimental group are lower than those in the control group.

MATERIAL AND METHODS

DESIGN AND SAMPLE

The study was an experimental study with a control groups. The students studying in their first year in the nursing department of a state university between October 21, 2019-March 13, 2020 constituted the population of the study (n=180). No sample calculation was made in the determination of the study sample, and all students who met the inclusion criteria were included in the study (n=130). After the research, it was calculated that 80% power was reached with the power analysis (n=130) taking into account 95% confidence and an effect size of 0.8. The lottery method was used to assign students to groups. The students were assigned to the experimental and control groups based on whether they had a single or double school number. As a result of the lottery, students with double school numbers were assigned to the experimental group (n=65), and those with single numbers were assigned to the control group (n=65). The students who were studying in the first year, attending the nursing fundamentals course, and agreed to participate in the study were included in the study. Students who did not wish to participate in the study, who had graduated from a health vocational high school, and who had prior knowledge of blood collection and vascular access were excluded from the study. No students dropped out of the study, and it was completed with 130 students.

DATA COLLECTION TOOLS

The data were collected using the personal information form, Spielberger State-Trait Anxiety Inventory (STAI), Peer Support Scale (PSS), Vascular Access Skills Learning Guide and Blood Collection Skills Learning Guide.

Personal Information Form: The form, which was prepared by the researchers in line with the literature, consists of demographic characteristics of students such as age, gender, graduated school, and questions about the state of experiencing fear/hesitation about caring for a healthy/sick individual, and the student's way of learning the professional skill.[5,9]

Spielberger STAI: The inventory was developed by Spielberger et al. to determine how an individual feels at a certain moment and under certain conditions. The Turkish validity-reliability study of the scale was conducted by Öner and Le Compte in 1983.[19] In the four-point Likert scale with 20 items, the answers range from 1 to 4 points, and individuals are asked to indicate the emotions and behaviors expressed in the items of the scale, according to the degree of anxiety they experience. The questions of the scale consist of positive and negative statements. While negative statements are scored directly, positive statements are scored inversely. The scale has 10 reverse scored items. In the calculation of the scale score, the total score of the reverse scored items is subtracted from the total score of the directly scored items of the scale. The total score of the scale is calculated by adding the number 50 to the score obtained. The total score obtained from the scale is between 20-80. A higher score indicates that the individual has a high level of anxiety. In the study of Öner and Le Compte, the Cronbach's alpha value of the scale was found to be 0.94.[19] In this study, the Cronbach's alpha value of the scale was found to be 0.86 in the first measurement and 0.89 in the second measurement.

PSS: The scale was developed by Kuo et al. to measure helping each other among nursing students in the same age group. The 4-point Likert scale consists of 17 items and has three sub-dimensions: physical help (1, 2, 3, 4, 5, 6, 7, 12, 13), academic help (8, 9, 10, 17) and emotional help (11, 14, 15, 16). The evaluation of the scale is obtained by summing the scores given to all items. The score that can be obtained from the scale is between 17-68. It is indicated that students' behaviors to help each other increase as the score obtained from the scale increases. The validity and reliability study of the scale in Türkiye was conducted by Çalışkan and Çınar. In the study of Çalışkan and Çınar, the Cronbach's alpha coefficient of the scale was found to be 0.93, and it was determined that it had a high degree of reliability.[20] In this study, the Cronbach's alpha value of the scale was found to be 0.90.

Vascular Access and Blood Collection Skill Checklists: In order to measure the skill levels of the students, the researcher prepared two separate checklists in line with the literature: the checklist for vascular access skills and the checklist for blood collection skills.[21,22] The checklists were submitted to the opinion of 5 experts in their fields for content validity, and the necessary arrangements were made in accordance with the suggestions received, and they were finalized. The checklists consist of 25 items in which each application step is scored. In the evaluation, each step where the student applied correctly was calculated as 1 point, and each step where the student did not make, made incomplete or made a mistake was calculated as 0 points. The lowest score a student can get from the checklists is 0, and the highest score is 25. The evaluation of the checklists was conducted based on the average score.

Implementation of the study: Selection and training of peer coaches: After obtaining approvals from the ethics committee and the institution where the study would be conducted, the students who would do peer coaching were selected. Among the students studying in the 1st year, students who graduated from health vocational high school were determined (n=22), and students who volunteered to be peer coaches were selected among these students (n=12). The selected students were provided with training on blood collection and vascular access skills by researchers in the laboratory setting. The skill levels of the students were evaluated at least 3 times. 9 students who fully developed their skills were included in the study as peer coaches.

All the students in the first year of the Nursing Department taking the "Fundamentals of Nursing" course were informed about the purpose, scope, duration, and method of the study. Among the students who accepted to participate in the study, 130 who met the criteria were included and assigned to the experimental and control groups by drawing lots. Then, all students were informed about the theoretical information regarding vascular access and blood collection in the classroom, and they were provided with the Student Information Form, STAI, and PSS to fill out (pre-test).

The education of the students in the experimental group was matched with their peer coaches by forming groups of 7-8 people from the students in the experimental group. Practice stations were created in the nursing skills laboratory, and models suitable for blood collection and vascular access and other necessary materials were placed at each of these stations. Peer coaches made students implement the blood collection and vascular access skills at these stations during 8 course hours. The applications were monitored by researchers by considering the probability that peer coaches would give wrong messages.

With regard to the training of the students in the control group, the skills practice was performed by the instructors of the school in the nursing skills laboratory for 8 course hours. In skill training, the same models and materials were used as the experimental group students. The students were first shown the application of the course by the instructor and then the students were asked to do it. The applications of the students were monitored by the instructors. All the students in the experimental and control groups had their education carried out simultaneously.

Evaluation was made 15 days after the skill practices with the students. In this stage, students were taken to the skills laboratory one by one in order to prevent students from being influenced by each other and to evaluate them objectively. The students were asked to fill out the STAI form again, and then the researchers conducted skill assessments on blood collection and vascular access skills using the practice guides (post-test).

ETHICAL CONSIDERATIONS

Approval of Trakya University Faculty of Medicine Non-Invasive Clinical Research Ethics Committee (date: July 1, 2019, no: 12/22) and the written permission of the institution where the study would be conducted were obtained prior to the study. Furthermore, each student participating in the study was informed about the study and their consent was obtained. The study was conducted in accordance with the principles of the Declaration of Helsinki.

DATA ANALYSIS

The SPSS 22.0 package program was used to analyze the data. Kolmogorov-Smirnov test was applied to determine whether the research variables showed normal distribution. Descriptive and comparative statistics (Mann-Whitney U test, Kruskal-Wallis test) were used in the analysis of the data. The results were evaluated at a 95% confidence interval and $p<0.05$ significance level.

RESULTS

The mean age of the students was 18.90±0.94 years, 85.4% of them were female, and 73.9% of them were graduates of Science/Anatolian high school. It was determined that 53.1% of the students were not afraid of providing care to the individual and that 67.7% of them learned by doing themselves. With regard to individual characteristics, no statistically significant difference was found between the two groups (p>0.05) (Table 1).

The median pretest STAI score of the students in the experimental group was 40 (29-51). The median PSS score in the total physical, academic and emotional assistance subscales of the scale was 47 (23-68), 25 (11-36), 11 (4-16) and 10 (4-16), respectively. The median pretest STAI score of the students in the control group was 38 (27-52). The median PSS score in the total physical, academic and emotional assistance subscales of the scale was 47 (19-65), 25 (9-36), 12 (5-15) and 11 (5-16), respectively. No statistically significant difference was found between the students' STAI pretest (p=0.061; Z=-2.079) and PSS total scale (p=0.952; Z=-0.061) and physical (p=0.719; Z=-0.360), academic (p=0.350; Z=-0.934) and emotional (p=0.955; Z=-0.056) help sub-dimensions (Table 2).

It was determined that there was no statistically significant difference in the comparison of the students' STAI pretest (p=0.061; Z=-2.079) and posttest (p=0.796; Z=-0.259) median scores between the groups. In the comparison of the students within the group, there was no significant difference in the control group (p=0.360; Z=-0.915), however, a significant difference was found in the experimental group (p: 0.000; Z: -4.131) (Table 3). It was determined that the students in the experimental group had higher STAI pretest scores.

When the students' median scores of the blood collection skills were examined, it was determined that the students in the experimental group got 24 (20-25) points, the students in the control group got 24 (20-25) points and there was no statistically significant difference between the groups in terms of median scores (p=0.520; Z=-0.643) (Table 4).

When the students' mean scores of the vascular access skills were examined, it was determined that

TABLE 1: Individual characteristics of students (n=130).

Variables	Experimental group (n=65)	Control group (n=65)	Total (n=130)	p value
Age (year) X̄±SD	18.93±1.01	18.87±0.87	18.90±0.94	0.712**
	n (%)	n (%)	n (%)	
Sex				
Female	52 (80.0)	59 (90.8)	111 (85.4)	0.082*
Male	13 (20.0)	6 (9.2)	19 (14.6)	
Educational level				
General high school	7 (10.8)	12 (18.5)	19 (14.6)	0.134*
Science/Anatolian High School	53 (81.5)	43 (66.2)	96 (73.9)	
Other High School¥	5 (7.7)	10 (15.4)	15 (11.5)	
Afraid of providing care to the individual				0.219*
Yes	34 (52.3)	27 (41.5)	61 (46.9)	
No	31 (47.7)	38 (58.5)	69 (53.1)	
Learning style				1.000*
By doing	44 (67.7)	44 (67.7)	88 (67.7)	
By listening/by watching	21 (32.3)	21 (32.3)	42 (32.3)	

¥Technical or Religious High School; *Chi-square test; **T-test; SD: Standard deviation.

TABLE 2: Comparison of students' STAI pre-test and PSS mean scores.

	Experimental group (n=65) Median (minimum-maximum)	Control group (n=65) Median (minimum-maximum)	Test statistics	
STAI pre-test	40 (29-51)	38 (27-52)	p=0.061*	Z=-2.079
PSS total	47 (23-68)	47 (19-65)	p=0.952*	Z=-0.061
Physical help	25 (11-36)	25 (9-36)	p=0.719*	Z=-0.360
Academic help	11 (4-16)	12 (5-15)	p=0.350*	Z=-0.934
Emotional help	10 (4-16)	11 (5-16)	p=0.955*	Z=-0.056

*Mann-Whitney U test; STAI: Spielberg State-Trait Anxiety Inventory; PSS: Peer Support Scale.

TABLE 3: Comparison of students' STAI scores.

	Experimental group (n=65) Median (minimum-maximum)	Control group (n=65) Median (minimum-maximum)	Test statistics	
STAI (pre-test)	40 (29-51)	38 (27-52)	p=0.061*	Z=-2.079
STAI (post-test)	38 (29-48)	37 (29-64)	p=0.796*	Z=-0.796
Test statistics	Z: -4,131; p: 0,000¶	Z: -,915; p: 0,360¶	-	

*Mann-Whitney U test; ¶Wilcoxon test; Statistically significant values (p<0.05) are shown in bold; STAI: Spielberg State-Trait Anxiety Inventory.

TABLE 4: Comparison of students' mean scores of blood collection and vascular access skills.

	Experimental group (n=65) Median (minimum-maximum)	Control group (n=65) Median (minimum-maximum)	Test statistics	
Blood collection skills score	24 (20-25)	24 (20-25)	p=0.520*	Z=-0.643
Vascular access skills score	23 (15-25)	22 (18-25)	p=0.694*	Z=-0.394

*Mann-Whitney U test.

the students in the experimental group got 23 (15-25) points, the students in the control group got 22 (18-25) points and there was no statistically significant difference between the groups in terms of median scores (p=0.694; Z=-0.394) (Table 4).

When the correlation between the scores of the students in the experimental and control groups for blood collection skills and vascular access skills and their STAI score was examined, no statistically significant correlation was found (p>0.05) (Table 5).

TABLE 5: The relationship between students' STAI scores (after skill training) and the mean scores of blood collection skills and vascular access skills.

	STAI	
	Experimental group (n=65)	Control group (n=65)
Blood collection skills score	r=-0.012	r=-0.003
	p=0.923*	p=0.978*
Vascular access skills score	r=-0.060	r=0.025
	p=0.635*	p=0.441*

*Spearman correlation analysis; STAI: Spielberg State-Trait Anxiety Inventory.

DISCUSSION

Nursing education consists of theoretical and practical courses that complement each other.[23] In the nursing education process, students are expected to master the theoretical knowledge, reinforce this knowledge with skill training in laboratories and transfer it to clinical practice.[9] However, the high number of students and the low number of teaching staff in nursing schools in our country and the lack of infrastructure and materials in educational institutions bring along some difficulties in the development of psychomotor skills.[10] The use of different education methods, such as peer coaching, becomes im-

portant in order to overcome these difficulties and enable students to develop their skills, reduce their anxiety, and improve their learning.[10,13] Therefore, it was aimed to determine the effect of peer coaching on skill development in this study.

University period is a challenging period in which there is a significant change in the lives of students. In this process, peer support is important for students entering a different environment.[2] Peer support contributes positively to students' learning by overcoming orientation problems, facilitating learning, and helping to resolve conflicts.[24] In the study of it was indicated that there was a positive relationship between adaptation to university life and peer support, and that peer support was very important in adaptation to university life.[24] Determining that students have a high level of peer support in this study is an important finding in terms of facilitating their adaptation to university and learning.

Since nursing education is complex and full of difficulties, it is known that students are at a higher risk of experiencing anxiety.[25] In particular, it is accepted that clinical practices and the lack of knowledge and skills perceived by students are an important source of anxiety.[26] In the literature, it has been reported that low and moderate levels of anxiety can increase students' motivation, create a safe learning environment, and contribute to increased academic success.[27] In this study, the moderate level of state anxiety of students measured before and after skill training suggested that the student's anxiety level contributed positively to learning ability. In the correlation analysis, it was determined that there was no significant relationship between the anxiety levels of the students and their skill scores, supporting this finding. In addition, the significant difference between the anxiety scores of the students in the experimental group before and after the skill training is important in demonstrating that peer coaching is effective in reducing the students' anxiety. With this finding, the last hypothesis of the study was accepted. In a similar study, it was determined that the anxiety levels of the students who practiced in the clinic for the first time increased, whereas the anxiety levels of the students who received peer support decreased.[27] In another study, it was stated that peer coaching education was effective in strengthening the relationship between students, reducing their anxiety, and meeting their learning needs.[28] In the work of Şancı and Kelleci, it was indicated that student anxiety, especially in the transition to clinical practice, was taken under control by the peer education method, which contributed positively to skill training.[29]

In nursing education, it is of great importance to develop psychomotor skills in the best way for students to use their professional knowledge and skills in the clinical setting.[30] Within the scope of this study, it was expected from the nursing students to improve their vascular access and blood collection skills through peer coaching. As a result of the study, it was determined that the skill development of the students who received peer coaching and who were supported by the instructors were both high and similar to each other. These results revealed that the skill development of students with peer coaching is as good as the training performed with instructors, and two hypotheses of the study were accepted. It is of great importance to provide the necessary learning environment in the skill development of nursing students, and therefore, it is known that different learning methods such as peer coaching should be used in education.[31] It is reported in the literature that the use of peer coaching in nursing education, which includes theoretical and clinical practices, causes the student to be both a learner and a teacher in this process, and contributes to the development of skills by increasing the self-confidence of the students.[9] It has been stated in the literature that peer coaching improves student's sense of confidence, makes learning effective and permanent, and increases proficiency.[32] In the study of Öztürk and Göçmen Baykara, it was reported that peer coaching is effective in developing and reinforcing skills in students and increases permanence.[33] In a systematic review on peer coaching, it has been stated that peer coaching programs are very important for the development of nursing students and are an evidence-based approach to improve the quality of education for nursing students.[34] In another study conducted with nursing students, it was reported that peer coaching contributes to the skill development of students and can be used in skill training.[18]

CONCLUSION

The fact that the students who received peer coaching received as high scores as the students trained by the instructor from the guides on blood collection and vascular access skills indicated that peer coaching had a positive contribution to skill development. Morever, it was determined that the peer coaching teaching method was effective in reducing students' anxiety. Therefore, it is recommended to use different training methods such as peer coaching, especially in institutions where the number of teaching staff is insufficient, to provide the skill development of students.

Source of Finance

This study was funded by Trakya University Scientific Research Projects Unit (TUBAP 2019/213).

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

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