ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

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The Feelings and Thoughts of Nursing Students in the Roles of Nurse and Patients About the First Intramuscular Injection to a Person: An Empirical Research

Hemşire ve Hasta Rolündeki Hemşirelik Öğrencilerinin Bir İnsana İlk İntramusküler Enjeksiyonuna İlişkin Duygu ve Düşünceleri: Deneysel Araştırma

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This study was presented as an oral presentation at 4th Basic Nursing Care Congress, May 25-27, 2017, Bodrum, Türkiye.

ABSTRACT Objective: This study was conducted to determine the feelings and thoughts of nursing students in the roles of nurse and patient about the first intramuscular injection (IMI) to a person. **Material and Methods:** Pretest-posttest trial model was used in the study. The sample of the study consisted of 80 volunteers from the students who took the nursing fundamentals course. The sample group students performed the IMI application according to the scenario prepared by the researchers in the laboratory in which the students were in the roles of both nurse and patient under the supervision of instructors. The data of the study were collected before and after the procedure using a questionnaire form. Descriptive statistical analyses and paired sample t-test were used in the analysis of the data. **Results:** While in the patient role, students' mean scores of feelings such as anxiety, irritation, nervousness, panicking, distress, scare, and embarrassment decreased after the IMI compared to pretest values ($p<0.05$), students' mean scores of feelings such as being relieved, happiness, courage and calmness increased compared to pretest values ($p<0.05$). In nurse role, students' mean scores of feelings such as irritation, distress, anxiety, and fear of complications decreased after the IMI compared to pretest values ($p<0.05$), while mean scores of feelings such as happiness, calmness, being relieved, courage, excitement and self-confidence increased ($p<0.05$). **Conclusion:** In both roles, the negative feelings and thoughts of the students before the IMI decreased after the application, and their positive feelings and thoughts increased. In line with the findings, it can be said that the study made significant contributions to the perspectives of the students as a professional member.

Keywords: Intramuscular injection; nursing student; patient-nurse role

ÖZET Amaç: Bu çalışma, hemşire ve hasta rolündeki hemşirelik öğrencilerinin insana ilk intramusküler enjeksiyonuna ilişkin duygu ve düşüncelerinin belirlenmesi amacıyla yapılmıştır. **Gereç ve Yöntemler:** Çalışmada, ön-test-son-test deneme modeli kullanıldı. Araştırmanın örneklemini hemşirelik esasları dersini alan 80 öğrenci oluşturdu. Örneklem grubunda yer alan öğrenciler, araştırmacılar tarafından hazırlanan ve öğrencilerin sırasıyla hemşire ve hasta rolünde olduğu senaryoya göre intramusküler enjeksiyon uygulamasını eğitimcilerin gözetiminde laboratuvarda gerçekleştirdi. Çalışmanın verileri, işlem öncesinde ve sonrasında anket formu kullanılarak toplandı. Verilerin analizinde tanımlayıcı istatistik analizler ve bağımlı gruplarda t-testi kullanıldı. **Bulgular:** Hasta rolünde iken öğrencilerin işlem sonrası endişe, tedirginlik, heyecan, panik yapma, sıkıntı, korku, utanma gibi duygularının puan ortalamasında işlem öncesine göre azalma olduğu ($p<0,05$), rahatlama, mutluluk, cesaret, sakinlik gibi duyguların puan ortalamasında işlem öncesine göre artma ($p<0,05$) olduğu bulunmuştur. Hemşire rolünde iken öğrencilerin işlem sonrası tedirginlik, gerginlik, endişe, sıkıntı, komplikasyondan korkma duygu puan ortalamasında ise işlem öncesine göre azalma olduğu ($p<0,05$); mutluluk, sakinlik, rahatlık, cesaret, kendine güven duygu puan ortalamasında işlem öncesine göre artma olduğu ($p<0,05$) bulunmuştur. **Sonuç:** Her iki rolde de öğrencilerin intramusküler enjeksiyon öncesi olumsuz duygu ve düşünceleri uygulama sonrası azalırken, olumlu duygu ve düşünceleri artmıştır. Bulgular doğrultusunda çalışmanın bir meslek üyesi olarak, öğrencilerin bakış açılarına önemli katkılar sağladığı söylenebilir.

Anahtar Kelimeler: İntramusküler enjeksiyon; hemşirelik öğrencisi; hasta-hemşire rolü

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The area where knowledge and skills acquired at school turn into behavior and new behaviors are developed is clinical education.[1] Nursing students prepare for clinical education in a laboratory environment. Students learn in a safe environment in the laboratory without fear of failure, making mistakes or harming patient.[2] Laboratory studies enable students to increase their experience, improve their decision-making skills, reduce their anxiety, improve their self-confidence and increase the quality of practice.[1,3,4] Studies found that simulation reduces students' anxiety before clinical practice and increases self-confidence.[5-7] As the number of applications in the laboratory increases, the rate of students making mistakes decreases and their self-confidence increases.[4,6-9]

It is important that students gain a holistic perspective in patient care and provide complete care to the patient. Feeling anxious about the application of newly learned knowledge and psychomotor skills can be inevitable for students. In this respect, it is necessary to develop affective skills in education.[9-11]

Intramuscular injection (IMI) is one of the medication practices in the nurses' area of responsibility.[2,12-14] IMI requires a good knowledge of nurses in anatomy, physiology and pharmacology as well as good psychomotor skills. Therefore, it includes students' cognitive, affective and psychomotor learning. IMI must be applied correctly to the patient. Incorrect practices can cause damage to nerves, muscles, veins and bones, and may lead to development of infection.[2,12,14-16]

Many people may experience fear and anxiety before, during and after IMI due to pain, dissatisfaction or loss of privacy.[17,18] Injection fear and anxiety are among the situations frequently encountered by nurses. In the literature, it was stated that supporting patients for IMI can minimize pain and anxiety.[12,19-23] Knowing that the injection will be done by a student who has never tried it before on a person may worsen these concerns.[21,22] Studies reported that nursing students experienced anxiety and stress during the first IMI on a person.[19,24]

While performing IMI in a controlled laboratory environment, students can realize their feelings, thoughts and their self-confidence, and see their shortcomings better.[6] When nursing students take on the role of patients, they can better understand the feelings an inexperienced practitioner can create in the patient, develop empathic tendencies, and learn from their own experiences.[24] Therefore, this study is thought to contribute to the affective and psychomotor development of students in teaching an invasive skill. Putting the student in the role of both nurse and patient can be a way to develop empathy for patients while learning the skills and combining the art and science of nursing. However, a study investigating the feelings and thoughts of students in the role of the patient was not found in the literature.

Aim: This study was conducted to determine the feelings and thoughts of nursing students in the roles of nurse and patient about the first IMI to a person.

RESEARCH QUESTIONS

1. What are the feelings and thoughts of the students while performing their first IMI to a person in the role of a nurse before and after the application?

2. What are the feelings and thoughts of the students in the role of patient who receive IMI for the first time by an inexperienced nurse before and after the application?

MATERIAL AND METHODS

Study Design: Pretest-posttest trial model was used in the study.

Study Setting and Time: This study was carried out at Tokat Gaziosmanpaşa University, Health Sciences Faculty, Nursing Department in the spring semester between April 27, 2016 and June 30, 2016. This research was conducted within the scope of "fundamentals of nursing course".

Fundamentals of nursing course is held in the spring semester as 20 hours a week (8 hours of theoretical lecture in classroom, 10 hours of clinical practice, 2 hours of lecture in laboratory). Lectures in the laboratory are held on low-fidelity simulators in an environment designed to reflect a hospital environment. Lectures in the laboratory are done after theoretical knowledge. Low-fidelity simulators are often used in skills training. In the laboratory lectures, students do their own practice on low-fidelity simulator under the supervision of 4 instructors.

STUDY POPULATION AND SAMPLE

The study population consisted of all students (n=120) who attended the first-year undergraduate nursing department and who were enrolled in the fundamentals of nursing course. The sampling of the study involved 80 students who had not performed an IMI on a person before and who volunteered to participate in the study in patient and nurse roles. The rate of participation in the study was 66.7%. A total of 40 students who took this course again (n=5), who graduated from a health high school (n=14), who performed IMI before (n=4) and who were not volunteer to participate in the study (n=17) were excluded.

RESEARCH PROCEDURE

The research consisted of 3 stages: 1) Preliminary stage, 2) Preparation of scenario stage, 3) Implementation stage.

1) Preliminary Stage

The preliminary stage including basic medication administration was a routine practice within the fundamentals of nursing course. The nursing students theoretically studied the basic medication administration and IMI (6 hours) in the fundamentals of nursing course before performing an IMI for the first time on a person. The headings involved in the theoretical content were IMI zones and their anatomical structures, amount of medication, needle entry angle into the tissue, medication delivery rate, position to be given to the patient by injection zone, asepsis principles and infection control measures.[25-29]

Following the theoretical course, the students were divided into small groups of 15 before laboratory practice and each group was demonstrated the IMI on a low-fidelity simulator by the first researcher. The students practiced the IMI on a low-fidelity simulator according to the steps of the procedure under the guidance of fundamentals of nursing course instructors.[25,28,29] The IMI administered by the students were observed by the course instructors and the steps that the students had difficulty performing or they misconducted were repeated until all students could do it without a mistake. At least one correct IMI application by a student on simulator was considered as an indication that the student was successful in grasping the application.

2) Preparation of Scenario Stage

The scenarios used for research were prepared by the researchers based on the literature.[2,12,28] The scenario included 2 parts as nurse and patient roles. The instructor explained when they did not understand. The students studied in the laboratory just before applying IMI for their scenario roles. In the student group consisting of 2 people, the students performed the patient role and then the nurse role before leaving the laboratory. The students were asked to act in accordance with the patient and nursing role in the scenario and imagine the scenario for themselves. The contents of the scenario for patient and nurse roles were as follows:

The patient role content: "You fall down and then apply to the hospital with the complaint of trauma-induced tissue damage on your leg, and you are hospitalized. You have intense pain in the trauma zone. A medicine with analgesic and anti-inflammatory effect is ordered for you by physician as IMI. This medicine will be applied in the company of the clinical teacher by the student nurse in the clinic. The student has not previously performed an injection on a person. The student nurse and the clinical instructor ask for your permission for the IMI. They prepare the medicine and are ready to apply it."

The nurse role content: "Your patient is admitted to the hospital with the complaint of trauma-induced tissue damage in the leg after falling down. A medicine with analgesic and anti-inflammatory effect is ordered for him/her by physician as IMI. As a student nurse, you did not perform an IMI before. You performed IMI in the laboratory on low-fidelity simulator. Your clinical instructor accompanies you while you are obtaining the patient's consent, preparing the medication, and performing the IMI." The preliminary stage of the study also contributed to the development of knowledge and skills of the students to prepare for the nurse role.

3) Implementation Stage

The implementation stage of the study was carried out one week after the preliminary stage. At the out-

set, a meeting was held to inform the students about the scope of the study and the application steps. Also, the laboratory environment was prepared for the students (materials necessary for IMI were prepared, bedding was changed, and the beds were surrounded with a curtain). In the study, considering the personal rights, religious beliefs, confidentiality and cultural characteristics of the students, female and male students were taken to the application in separate laboratories in line with their preferences. The students formed groups of 2 based on their choice and prepared their roles using a script. The study was carried out with 40 pairs. No medication was administered to the students in the study. The study was completed in 8 hours with 4 instructors. The IMI procedure took approximately 30 minutes for each student in the role of a nurse.

DATA COLLECTION TOOLS

The data of the study were collected using the questionnaire form developed by the researchers based on the literature.[11-13,16] The questionnaire form consisted of 3 sections. The first section included 4 questions about the demographic characteristics of the students (gender, age, the reason for choosing nursing department, finding himself/herself suitable for nursing profession), and the second part included 7 questions involving the application of IMI (having IMI before, feeling fear during previous IMI, feeling anxiety due to IMI application by inexperienced fellow friends). In the third part, there were forty expressions about the feelings and thoughts that the patient and nurse could experience before and after the procedure (I'm anxious, I am nervous, I trust my friend, I'm courageous, I'm relieved, ...). Of the forty expressions, 27 were about feelings and 13 about thoughts. Students in the patient and nurse roles were asked to rate their expressions from 0 to 10 for their feelings before and after IMI procedure (0 minimum/nothing-10 maximum).

DATA COLLECTION

Prior to the IMI, written informed consent of the students were obtained both for patient and nurse roles. The students filled in the first part of the questionnaire form before the implementation stage. They performed the IMI in turn with the friend they selected for patient and nurse roles. After each injection, the application was interrupted for 15 minutes, during which the students were allowed to relax and fill in the relevant part of the questionnaire form. The students were accompanied by the instructors throughout the procedure.

DATA ANALYSIS

Data analysis was done with IBM SPSS 22.0 (Chicago, IL, USA) software package program. Descriptive statistics (number, percentage, mean, standard deviation and minimum-maximum values) were employed and the paired samples t-test was used to compare dependent variables. The statistical significance level was taken as $p<0.05$.

STUDY ETHICS

The written permission of Tokat Gaziosmanpaşa University, Faculty of Health Sciences and the approval of the Sivas Cumhuriyet University Non-Invasive Clinical Research Ethics Committee (date: May 27, 2016, no: 2016-05/27) were obtained. After the students had been informed according to the informed consent principle, their verbal and written consents were taken separately for patient and nurse roles. The study was conducted in accordance with the Helsinki Declaration principles.

RESULTS

In the present study investigating the feelings and thoughts of the students in nurse and patient roles on performing IMI for the first time on a person, the mean age of the students was 19.23±1.44 years and 71.25% of them were female. About half of the students (47.5%) preferred nursing department on their own will whereas 36.2% came to this department for better job opportunities. 92.5% of the students found the nursing profession suitable for themselves. In our study, 86.3% of the students had a previous IMI experience and 55% stated that they had been frightened in the previous application. Fifty-five percent of the students who would be given an injection were anxious that their fellow friends who would perform the injection was inexperienced, 62.5% trusted that their friend would perform the application correctly, and 32.5% were undecided about it. 56.3% of the stu-

dents reported that they felt ready for IMI, while 41.2% felt they were partially ready for the practice (Table 1).

In the present study, the emotions, and thoughts of the students in the patient role before and after IMI were examined. In patient role, negative feeling statements of "I'm scared" (4.44±3.01), "I'm anxious" (4.94±3.21) and "I'm irritated" (4.69±3.13) were the ones with the highest mean scores before the IMI, which decreased significantly after the IMI (1.84±1.76, 1.61±1.19 and 1.63±1.10, respectively; $p<0.001$). The positive feeling statements of "I'm relieved", "I'm happy" and "I'm courageous" had moderate mean scores before the IMI (5.24±3.40, 4.35±3.11 and 6.15±3.18, respectively) and these mean scores improved significantly after the IMI (7.81±3.00, 7.26±3.28 and 7.30±3.09, respectively; $p<0.05$). In the patient role, students thought they were quite relieved (8.30±2.16 before the IMI and 8.94±2.53 after the IMI) with the presence of the instructor. Positive feelings increased and negative ones decreased after IMI in the patient role (Table 2).

In this study, the pre-and post-IMI feelings and thoughts of students in the role of nurse were examined. In the nurse role, positive feeling statements of "I'm happy" (1.32±1.21), "I'm calm" (5.79±3.02) and "I'm relieved" (5.92±3.17) had low mean scores before the IMI, which improved significantly after

TABLE 1: Demographic characteristics of students and their opinions on IMI application (n=80).

	n	%
	$\bar{X}$±SD	
Mean age	**19.23±1.44 (minimum: 18, maximum: 27)**	
Gender		
Female	57	71.25
Male	23	28.75
The reason for choosing nursing department		
Favoring the profession	38	47.5
Job possibilities	29	36.2
Family effect	9	11.2
Other*	4	5.1
Finding himself/herself suitable for nursing profession		
Yes	74	92.5
No	6	7.5
Having an IMI before		
Can't remember	11	13.7
Yes	69	86.3
Feeling fear during previous IMI application		
Can't remember	11	13.7
Yes	44	55
No	25	31.3
Feeling anxious due to the friend's practice		
Yes	44	55
No	36	45
Trusting that the friend would perform the application correctly		
Undecided	26	32.5
Yes	50	62.5
No	4	5
Feeling ready for IMI application in the role of nurse/practitioner		
Partly	33	41.2
Yes	45	56.3
No	2	2.5

*Friend's advice (3), nurse advice (1); SD: Standard deviation; IMI: Intramuscular injection.

TABLE 2: Mean scores for student feelings and thought in patient role before and after the intramuscular injection application (n=80).

Statement of feelings	Before application† $\bar{X}$±SD	After application† $\bar{X}$±SD	t	p value
I'm scared	4.44±3.01	1.84±1.76	5.266	**<0.001**
I'm anxious	4.94±3.21	1.61±1.19	7.105	**<0.001**
I'm irritated	4.69±3.13	1.63±1.10	6.860	**<0.001**
I'm in panic	3.28±2.53	1.65±1.71	3.977	**<0.001**
I'm nervous	3.41±2.61	1.83±1.91	3.851	**<0.001**
I'm distressed	2.75±2.27	1.61±1.57	2.966	**0.005**
I have no courage	2.35±2.31	1.73±2.11	1.382	0.173
I'm embarrassed	3.26±2.57	1.45±1.23	5.282	**<0.001**
I'm excited	5.54±2.79	2.77±1.76	6.103	**<0.001**
I'm calm	5.32±3.13	8.20±2.71	5.237	**<0.001**
I'm relieved	5.24±3.40	7.81±3.00	4.437	**<0.001**
I'm happy	4.35±3.11	7.26±3.28	5.755	**<0.001**
I'm courageous	6.15±3.18	7.30±3.09	2.561	**0.013**
Statement of thought	**$\bar{X}$±SD**	**$\bar{X}$±SD**		
I pray	5.86±3.74	4.65±3.96	2.210	**0.032**
I trust my friend	7.54±2.81	8.30±2.61	1.967	0.055
I'm relieved due to the presence of the instructors	8.30±2.16	8.94±2.53	0.553	0.582

†(Minimum: 1-Maximum: 10); t: Paired sample t-test; SD: Standard deviation.

the IMI (8.01±2.80, 8.01±2.72 and 8.64±2.21, respectively; p<0.001). The negative feeling statements of "I'm nervous" (3.62±3.11), "I'm anxious" (3.19±2.84) and "I'm distressed" (3.05±2.68) had the highest mean scores before the IMI but these mean scores decreased significantly after the IMI (1.69±1.51, 2.10±1.76 and 1.82±1.56, respectively; p<0.05). Panic (3.45±2.51), scare (3.76±2.84) and lack of courage (2.59±2.55) feelings experienced before IMI were obliterated completely after the IMI. In nurse role, some thoughts experienced before IMI such as "I'm sure" "I will do it right" (7.22±2.15), "I pray" (6.31±3.48), "I'm afraid to hurt" (5.62±3.22) and "I find the application difficult" (2.63±2.10) were not observed after the IMI. It was found that the concern for the development of complications decreased significantly after the IMI (4.35±2.94 vs. 3.21±2.93; p=0.003). It was observed that negative feelings decreased after the application (Table 3).

DISCUSSION

In our study, the majority of nursing students reported that they had already received IMI before and that more than half of them were frightened by this experience (Table 1). In general, many people may experience fear of these interventions due to reasons such as pain, dissatisfaction and loss of confidentiality caused by invasive procedures. Therefore, fear and anxiety can be expected before, during and after the IMI, which is an invasive procedure. It was stated in the literature that pain occurs due to IMI and other injections, that pain in turn causes fear of injection, and that various methods are tried to reduce it.[24,25] In fact, the fear experienced by the students in our study in both nurse and patient roles was associated with this situation. The fact that students would perform IMI on a person for the first time or that they would be given IMI for the first time by a novice fellow friend could be the cause of anxiety and fear specific to this study. The fear in the patient role could be due to the injection procedure while the fear in nurse role could be due to the fact that a living person is involved. No study could be found in the literature that we could associate with our study findings and no discussion could be made in this context.

In our study, more than half of the students stated prior to the application that they were anxious due to their inexperienced friends (Table 1). It is normal for the student in the patient role to be afraid and feel anxious of an inexperienced practitioner. A person who is

TABLE 3: Mean scores for student feelings and thoughts in nurse role before and after the intramuscular injection application (n=80).

	Before application‡	After application‡		
Statement of feelings	**X̄±SD**	**X̄±SD**	**t**	**p value**
I'm happy	1.32±1.21	8.01±2.80	19.679	**<0.001**
I'm calm	5.79±3.02	8.01±2.72	5.111	**<0.001**
I'm relieved	5.92±3.17	8.64±2.21	6.756	**<0.001**
I'm courageous	6.26±2.95	8.16±2.35	6.431	**<0.001**
I'm excited	5.54±2.81	3.22±2.18	6.308	**<0.001**
I'm confident	7.29±2.40	8.62±2.06	4.323	**<0.001**
I'm irritated	3.75±2.62	2.05±1.73	5.739	**0.010**
I'm nervous	3.62±3.11	1.69±1.51	5.623	**<0.001**
I'm anxious	3.19±2.84	2.10±1.76	4.654	**<0.001**
I'm distressed	3.05±2.68	1.82±1.56	3.810	**<0.001**
I'm in panic	3.45±2.51	-		
I'm scared	3.76±2.84	-		
I have no courage	2.59±2.55	-		
Statement of thought	**X̄±SD**	**X̄±SD**		
I'm sure I will do it right	7.22±2.15	-		
I pray	6.31±3.48	-		
I'm afraid to hurt	5.62±3.22	-		
I think I can hurt someone else	3.33±2.39	-		
I find the application difficult	2.63±2.10	-		
I am concerned about the development of complications	4.35±2.94	3.21±2.93	3.120	**0.003**
I'm proud of myself	-	7.92±2.21		
I'm successful	-	8.37±1.81		
I had difficulty performing the application	-	3.11±2.18		
I got excited during the application	-	6.07±3.22		
The instructor made me feel better	-	8.41±2.52		

†(Minimum: 1-Maximum: 10); t: Paired sample t-test; SD: Standard deviation.

yet inexperienced in the process of learning a new skill may be less self-confident and can have difficulty in deciding the steps of an application on his/her own. In this case, the person may be more attentive to worry about negativity while practicing the skill and may not be able to control his/her anxiety about the situation.[30] The patient, on the other hand, may be adversely affected by this attitude of the practitioner who cannot demonstrate a self-confident and stable stand. In this context, combining the theoretical knowledge and skills gained during the training process and transferring them into a safe and comfortable application for the patient is getting even more important.[31,32]

More than half of the students in the nursing role felt ready for IMI administrations (Table 1). This result may be a reflection of the students' pre-practice and thus they may have felt ready in this way. Uslusoy found that simulation training greatly contributed to students' professional and other skills, reduced stress and increased their self-confidence.[33] In addition, more than half of the students felt ready to deal with injection for which they experienced fear before, and they felt that both themselves and their fellow friends had the required IMI skill. In this respect, understanding the feelings and thoughts of the patient and the nurse in IMI applications would make significant contributions to both students and the practice provided by the students. The empathic approach of the nurse to the patient for the IMI, and preparing and supporting the patient physically and psychologically for the application is getting more critical. In this respect, the holistic approaches should be taken as a basis in nursing skills training and the understanding of the learner should be strengthened.[19,20] In this study, students who assumed the role of the patient had the opportunity to evaluate the practice from

the perspective of a patient. It is thought that this opportunity provides very important gains in empathic approach to patients. Empathy, which enables us to see people's lives through their own eyes and aims to understand them, undoubtedly has a crucial place in nursing profession.[11,20,34]

Students in the patient role found that they experienced the negative feelings of nervousness, anxiety, irritation and scare more than other negative feelings before IMI but these negative feelings diminished significantly after IMI ($p<0.001$; Table 2). Similarly, pain and fear of injection were reported to be commonly expressed.[22,23] It is thought that with this empathetic approach, students will be more sensitive to patients in nursing practices and will give more importance to the individuality and privacy of the patient.

In the present study, students in the patient role felt positive feelings more intensely than negative ones before the IMI. Of the positive feelings, what students emphasized most was that they were courageous, and these feelings increased significantly after IMI ($p<0.001$; Table 2). Among the positive feelings, the expression of "I'm courageous" had the highest mean score. Mean scores of all negative feelings decreased significantly after the IMI ($p<0.001$; Table 2). It was found that the presence of the educators during the application had a positive effect on the students in the patient role and thus they trusted their fellow friends to perform the IMI. The fact that more than half of the students had experienced IMI before, that they had practiced on low-fidelity models after the theoretical course in the teaching of IMI under the supervision of educators, that the educators were with them during the application, that they knew their friends who would perform IMI, and that they trusted their friends might have been effective for these findings. Today, simulation applications are utilized for removing the negative situations that can emerge during skills training and creating successful preliminary experiences.[27,35] In our study, low-fidelity simulation was used for providing students with successful preliminary experiences in IMI skills training, they were made to repeat the application until they perfected the skill, and positive results were obtained from these repeated practices in the preliminary stage. In the literature, it was stated that the large number of applications before clinical practice improved the skills and self-confidence and reduced the anxiety of students.[1,3,4] In fact, more than half of the students in nurse role stated that they felt ready for the practice, they had confidence in themselves greatly, they were sure they would perform the application correctly, and that they felt proud of themselves after the application (Table 1, Table 3).

It was observed that the students in nurse role felt positive feelings more than negative ones, self-confidence and courage being the most notable ones. After IMI, these feelings increased even more ($p<0.001$). Students in this role experienced negative feelings of nervousness, anxiety and distress before IMI, but these negative feelings decreased significantly after IMI ($p<0.001$). Furthermore, negative feelings of panic, scare and lack of courage were obliterated altogether after the IMI. It is normal for positive feelings to rise as a result of overcoming a difficult situation. A newly learned or first-time skill can create anxiety in the learner. In the literature, it was found that the level of anxiety of the students who performed an IMI on a person for the first time was high before the application and that it decreased after the application.[4,24] It was stated in these studies that students were relieved and significant decreases were observed in the state anxiety of the students once the stressful conditions were removed. Before the IMI, the students in the nurse role stated that they were afraid of hurting their friends, but after IMI they were successful and were proud, as well as thinking that they would do the procedure right. Their concern about the development of complications, on the other hand, was significantly reduced ($p<0.03$). The negative feelings experienced by the students could have been due to the fact that it was a real application and, as they themselves stated, there was the potential of hurting another person. Indeed, some complications may develop when the IMI application is not performed in accordance with the rules.[2,14,15,25]

In the present study, students stated that they were scared, felt nervous and prayed in both the patient and nurse roles before IMI, they still trusted their friends and themselves to a great extent, and they were courageous. They also mentioned that they were relieved in the presence of an instructor in both roles. The first ex-

periences in student life/professional training are generally anxious and worried, and require the support of the instructors.[1,25] In this context, the students in our study expressed that they were anxious and got excited during the application, but that they were relieved with the presence of the instructors (Table 2, Table 3). It is thought that the presence of a training expert beside the novice in the patient role provided relief. While in the role of nurse, he/she also provided relief to an expert student who would support the novice practitioner in any problem. It is believed that the support given by the instructors during the process was important in the feeling of relief experienced after the application in both roles.[30-32,35] When we look at this aspect, IMI is an important intervention reflecting both scientific and artistic side of nursing.[16] The findings of Kılıç Akça et al. were in line with the results of our study.[36] In their study before the injection application, the instructor touched on the shoulder of the students who was going to give an IMI, and this touch was found to reduce the anxiety level of the students significantly compared to that of the control group.[36] Since the students applied only IMI within the scope of this research, it could be stated that the method used in the teaching of injection contributed to the cognitive and psychomotor learning of the students. It is thought that students will be more sensitive to patients in nursing practices and will especially attach more importance to the individuality of the patient.

LIMITATION OF THE STUDY

The main limitations of the study were that the evaluations were based on students' self-reports, and that the students fulfilled both the patient and the nurse roles within a short time.

CONCLUSION

It was found that the negative feelings and thoughts that existed before the application in both roles decreased after the application. The fact that the students were in the roles of nurse and patient during IMI applications in turn allowed them to experience the emotion and thoughts of both nurses and patients regarding the application, which could improve empathic skills and professional attitudes of students. It can be recommended that prior to the IMI, which is an invasive intervention, students should be equipped with adequate theoretical knowledge and application skills, supported by instructor throughout the whole process, and encouraged for the application, and that empathic approaches should be promoted. It can be suggested that similar studies be performed in the teaching of other injection applications and intravenous catheter placement.

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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

Idea/Concept: *Şahizer Eraydın, Şerife Karagözoğlu;* ***Design:*** *Şahizer Eraydın, Şerife Karagözoğlu;* ***Control/Supervision:*** *Şahizer Eraydın, Şerife Karagözoğlu;* ***Data Collection and/or Processing:*** *Şahizer Eraydın;* ***Analysis and/or Interpretation:*** *Şahizer Eraydın, Şerife Karagözoğlu;* ***Literature Review:*** *Şahizer Eraydın, Şerife Karagözoğlu;* ***Writing the Article:*** *Şahizer Eraydın, Şerife Karagözoğlu;* ***Critical Review:*** *Şahizer Eraydın, Şerife Karagözoğlu;* ***References and Fundings:*** *Şahizer Eraydın, Şerife Karagözoğlu.*

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