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Students' Perceptions of Psychomotor Skills Training: A Qualitative Study

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Abstract

Background: Simulation practices to be performed using active learning methods in professional skills laboratories are considered crucial in attaining learning outcomes. Models in laboratories and the materials used in healthcare are of great help for students' to revise, reuse and improve their nursing skills. Models in professional skill laboratories range from low to high-fidelity. The models in the laboratory where the present study was conducted were of low-fidelity, which is also the case in other professional skills laboratories in Turkey.

Aims: The aim was to determine perceptions of the first-year nursing students taking Fundamentals of Nursing course in 2013-2014 academic year about nursing practices.

Method(s): The population consisted of 200 students performing their practices in a professional skill laboratory. Among the students who agreed to participate in the study, 20 students in the sample were selected randomly. Data were collected with a semi-structured form and in-depth interviews. The interviews were carried out by a nursing faculty member who had not taught Fundamentals of Nursing course and whom the students had never met before. Data were evaluated using descriptive analysis.

Results: The study found that the students chose nursing profession under the guidance of their families. They experienced anxiety and fear during laboratory practices. The practices remembered most by the students were parenteral and self-care applications and practices performed on living bodies. The materials in the laboratory were adequate but not close to lifelike. The physical environment was adequate in general. The students had clear and informative communication with the instructors and nurses. The guidelines provided practical feedback, but they had items expressed in too long sentences. The questions covered by the reflective writing activity at the end of the practice were not clear and repetitive. The students were confident that they were able to perform practices covered in the syllabuses for the following years, and they felt they were prepared for nursing.

Conclusion: Finally, the feeling experienced most by the students following the laboratory practice was self-confidence.

Keywords

Simulation, Psychomotor skills, Nursing practices, Nursing skills, Nursing education

Introduction

Psychomotor learning is defined as learning new actions or reapplying the existing ones by modifying them. Psychomotor learning involves consistent and integrated operation of processes related to affective and cognitive functions. Individuals learn manual skills with the support of visual perception as well as exploring objects by touching.

The principal learning objective in nursing education, as is the case for other occupational groups in the healthcare field, is to develop psychomotor skills [1-3]. Simulators are used to facilitate achieving this objective. The main objective of simulation is to imitate real life in a way that stimulates a realistic experience. Creating a context with a realistic situation for learning process is an important approach in achieving permanent learning. In addition to supporting individuals by providing repetition, feedback and self-control in training process, simulators also make it possible to recognise unique learning characteristics of individuals. A simulator user needs to "feel" the object that acts as the source of a particular skill acquisition. Experiences such as using different senses and different realistic situations promote individuals' curiosity, motivation and willingness to learn, which is required for meaningful learning [1].

Over the last two decades, there has been a significant increase in the use of simulation technology for instruction and assessment in professional training in the healthcare field. There are many factors increasing the use of simulation technology in medical education. These factors include advances in diagnostic and therapeutic technology such as screening and endoscopic procedures. The use of simulation in training process has provided highly significant results such as reducing the time allocated for clinic visits and hospital stay and increasing the number of patients examined [4].

Simulation-oriented work of nursing educators fills the gap between theory and practice by facilitating the transfer of knowledge from theory to practice. Different and innovative teaching strategies to be employed in skills laboratories where simulation applications take place facilitate practice learning and self-confidence. However, pre-clinical applications, which provide students with a unique learning experience with adequate equipment, are pretty time-consuming. Nevertheless, environments that ensure a safe learning experience, allow students to distinguish between "knowing" and "doing" [5].

Simulation techniques used in training process range from low-

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fidelity to high-fidelity depending on the degree of feeling of realness they offer. Fidelity can be defined as the level of reality existing within a simulation both in the technology employed and in the environment where the simulation [6]. Low-fidelity simulators involve learning with simple, static and manual learning materials. Full-scale or high fidelity computer-controlled learning materials, on the other hand, are programmed to provide realistic physiologic responses to a practitioner's actions in order to improve critical decision making capabilities [7,8]. The use of high fidelity simulators in medical education has yielded promising evidence regarding development of better learning outcomes [9]. Therefore, what is ethical for nursing practice is to implement the basic necessary procedures in the laboratory environment before applying any practice on patients [5].

Due to the worldwide increase in the number of students in baccalaureate nursing programs, nurse educators need laboratories that are so well equipped as to ensure students' acquisition of the skills required for clinical areas. The use of advanced simulation materials that are close to lifelike provides students with a potential clinical learning opportunity and develops their critical thinking and clinical decision-making skills [9]. Unfortunately, however, the models in the professional skill laboratory where the present study was conducted were of low-fidelity, which is also the case in other professional skills laboratories in Turkey.

Research Questions?

1. What are the difficulties for nursing students who attain Fundamentals of Nursing Skills course in skill laboratory?
2. What are their feelings during laboratory applications?
3. What is the most remembered skill?
4. How is the relationship between facilitators and students?
5. What/How is the guidelines to effect on skill learning?
6. What/How is the reflective writing's to effect on skill learning?

Materials and Methods

Objective

The aim of this descriptive study was to determine perceptions of the students taking Fundamentals of Nursing course in 2013-2014 academic year regarding nursing practices in a psychomotor skills laboratory.

Population and sample

In-depth interviewing, a qualitative data collection method, was used in this study. The study population consisted of 200 students performing their practices in a professional skill laboratory. Among the students who agreed to participate in the study, 20 students in the sample were selected randomly. The criterion sampling method was used in the study (i.e., 10% of the students). The students to be enrolled in the study were determined randomly by computer and they were assigned numbers (i.e., No. 1, No. 2, … No. 20). These students, a total of 20 students, were then informed about the research aim and method, and 19 students agreed to participate in the study, but one student rejected to participate. Also, one of the interview voice recordings could not be transcribed because of a technical problem with the recording.

Data collection tool

Data were collected with an information form about some demographic characteristics, a semi-structured form and in-depth interviews. The interviews were carried out by a nursing faculty member who had not taught Fundamentals of Nursing course and whom the students had never met before. A written informed consent was taken from the students before the interviews. Data collection process continued until saturation was reached.

Psychomotor skills laboratory practices

The laboratory practices and theoretical classes were conducted with two groups (Group A and Group B), each consisting of 100 students (N = 200). Each of the groups practised in the laboratory for one (1) day a week. Each of the 100-student groups was divided into three (3) sub-groups on laboratory practice days (Table 1).

Table 1: Practice Schedule.

Hours	PRACTICE WEEKS								
	Week I			Week II			Week III		
	08.00-10.00	10.15-12.15	13.30-15.30	08.00-10.00	10.15-12.15	13.30-15.30	08.00-10.00	10.15-12.15	13.30-15.30
Laboratory Practice	I	II	III	III	I	II	II	III	I
Classroom	II	I	II	I	II	I	I	I	III
Classroom	III	III	I	II	III	III	III	II	II

The two groups performed their practices in the professional skills laboratory according to the skills guidelines consisting of checklists prepared specifically based on nursing field [10,11]. The first group practised in the laboratory while the second and third groups studied the subjects with materials brought to the classroom and discussed any unclear points with the instructor in the classroom environment. Once their practice ended, the first group left the laboratory and they were asked to participate in a reflective writing activity. In the meantime, the second group went to the laboratory. Following the reflective writing activity, the first group discussed unclear points. In order to maintain objectivity in the evaluation of laboratory practices, the first group of the students and the trainers in the laboratory were rotated. The students received training related to professional skills and five (5) nurses and four (4) faculty members participated in the evaluation process. Each of the skill practices was assessed by the faculty members and nurses. After that, the students were given feedback about their strengths and weaknesses. The students performed their practices on low-fidelity models. On the other hand, the students were given the opportunity to practice with any kind of materials that they are likely to see in clinical environments (e.g., ampoules, vials, surgical gowns, gloves, trommels, etc.). The students were assessed for a total of 53 psychomotor skills during a semester and the students enrolled in the study completed all of the skills. The psychomotor skills included hands-on activities about vital signs (e.g., blood pressure measurement, body temperature-respiration-pulse measurement), movement, parenteral (e.g., IV, IM, IC application, phlebotomy, vascular access), respiratory system (e.g., aspiration, nebulization), digestive system (e.g., nasogastric intubation, etc.), urinary system (e.g., urinary catheterization), urinary system (e.g., enema, rectal tube, etc.), and cold-hot applications. Some of the skills (e.g., vital signs, movement, phlebotomy, vascular access, etc.) were carried out on students who volunteered.

Data Analysis

Data were evaluated with descriptive analysis method [12]. The original words, expressions, and statements were kept in the transcripts.

Limitations

This research was aimed to evaluate freshman nursing students' opinions about laboratory applications. That's why it was limited regarding current nursing program and freshman nursing students in Turkey.

Results

The results are presented below.

The most common reason reported by the nursing students in this study for choosing nursing as a profession was the guidance by their families or parents.

"I was not totally certain about this decision at first, but after starting to study nursing, I felt good. It was me... and it was my

brother, too, to be honest. But I was OK as well. You know, he said, "It's a good job. You're very likely to find a job in nursing. And it good for health" (No. 8).

"Actually, it was not my decision. It was my husband who wanted this… He always wanted me to get a permanent job in the public sector. You know… he said, "It's no good working for someone else till 11 or 12 at night. A hospital is a safe place at least…" I liked the idea, too. I realised that I had never thought about it before. … Then we decided to give it a try. We did some research, you know, about the training, working conditions and hours. However, I realised that studying nursing is pretty different from what it looks like. Anyway, I think this job is for me. I mean I like it" (No. 15).

The statements of the students on laboratory practices showed that they experienced anxiety and fear, but they gradually overcame these feelings, and they their laboratory experiences facilitated the learning process.

"Well, I feel anxious although I have medical training background… Maybe, you've realised that I speak so fast. I blush very quickly. Sometimes I forget everything and don't know what to do in the middle of an application… This is a unique anxiety if you know what I mean…"(No. 2).

"You know, when we first went to the lab for practice… It was… Everything was so real. We had the opportunity to practice all that theoretical knowledge in the lab. I graduated from a vocational high school of health, you know. They took us to a real hospital and we gained experience on real patients directly… But here, in this lab, learning things on a model, I think, is more… I don't know how to say that… What I mean is that this lab practice helps us get rid of our anxiety. And, when you go to the hospital, you have more self-confidence because this experience helps us gain confidence…" (No. 4)

"…About my experience in the lab… I think I made a little progress about overcoming my fear. I thought my hands would tremble. I mean those red lights flashing when we do something wrong and things like that. You know, sometimes the models did not work properly… There was this practice that went really well. I had difficulty in giving injection into that area. Our instructor showed me how to do that two or three times and then I got it… I felt terrified at first but I gradually overcome that feeling when I learn some things. I realized that I was supposed to have self-confidence a little bit. And the patient's… er… the patient's, I don't know how to put this, is important, too. I mean we could sometimes forget or skip the item about respecting the patient's privacy. But when you think about it, it is not rocket science anyway. You know you should first lay the sheets, and you should do this or that first. You know what, what you have in your mind is not a big deal if you think about it…" (No. 5)

The students' opinions on their own experiences showed that they frequently experienced anxiety and fear.

"What it was like… Well, I didn't have much difficulty in the first applications but… I don't know how to put this… It's like listing if you know what I mean. So, it's really exciting and you can get pretty excited. Suddenly you can forget everything…Well, you actually know what to do at that moment… But, you know, you somehow skip some steps and can't do it…Usually it is just anxiety." (No. 13)

The students in the study reported that they were able to remember parenteral and self-care practices most.

"What I remember most... Well, personally, what I like most is practicing vascular access because I believe it is the essence of nursing. I mean it's the first nursing skill that comes to my mind. It is a core skill. A nurse establishes vascular access… Er… That is it. I mean it is the first thing I can think of. And inserting cannulas… Nurses insert cannulas, I mean they drain blood..." (No 6)

"We practiced so many things like patient baths or giving them a bed bath. We literally practiced them and there were a lot of other exercises… You know, our friends perform these activities and we watch them. I usually avoided stepping forward and waited for a few people to carry out the tasks first because I wanted to see how they did it. And this gave me time to get prepared. You know, watching others doing things can be useful for learning. I mean, bed bath, for example, is really a complicated procedure and it scared me. I was worried that I would forget things or I would do something wrong, so I watched my friends really carefully. I think that could be why I remember it most (Smiling). (No. 17)

Practicing on living bodies (e.g. draining blood, establishing vascular access) was the most common reason reported by the students among the reasons why they remembered some practices most.

"We got to try some practices on each other's bodies. For example, we tried establishing vascular access. You know, models and real living bodies human are naturally different from each other… A living human body against a model. We practiced on models and, after that, we tried it on our friends. We were able to do it. And we felt much more confident when we saw we were able to do it. This is the practice I remember most now… I mean practicing on a living human body is a more effective way of learning things." (No. 8)

In general, the students reported that they had the opportunity to practice with sufficient and adequate equipment and models. On the other hand, the students had different opinions about the fidelity of the equipment and models, and they experienced some technical problems.

"I think models are sufficient. When my friends and I talked about models, they said, "We'll do this and we'll do it in this way." As far as I know, previous classes did not have sufficient models… Well, I was wondering what it would be like. I mean, we were a total of 200 students and I was wondering if our turn would lever come. But this, this system, I mean, dividing the students into smaller groups is a very good idea. We can both see them and touch them. This is far better for learning. Also, there are enough models…" (No. 2)

"Well, they really look like real people. People say, "You're really lucky." They didn't have the opportunity to practice with this kind of advanced models." (No. 6)

"The models cause a lot of trouble in practice, too. Take injections for example. Practicing injections or establishing vascular accesses can be rally hard. I mean it's not like normal human skin. I don't know if it's possible anyway… Well, we had problems in these procedures. And it was difficult to move some of the models because, as I said before, they are not close to real human bodies…" (No. 11)

The students reported that the laboratory provided well-balanced heating-illumination-colours, but it was inadequate in terms of air-conditioning and it had background noise.

"No. I think it was good. I mean, illumination and other stuff were good enough. I mean in practice… we didn't have any difficulty about that… It was sufficient in general… But I can't say the same thing for air-conditioning. And we're so crowded… I think we're more than thirty in a group but there's no air-conditioning and you can't open any windows… And one more thing, as I have said earlier, we are a crowded group… I mean, there are always people talking all the time in other groups and their noise affects us…" (No. 4)

Although some of the students said that their communication with the course instructors was clear and informative, some other students said they experienced anxiety and restraint in this communication.

"… About drug administration, for example, our instructor demonstrated us every single point. You know, how to perform each step… These demonstrations were really informative and I believe we learnt better. Sometimes the guidelines are totally confusing and we just feel lost because they are really badly written and so complicated. Fortunately, our instructors clarify them during practices..." (No. 3)

"… Our instructors, they have a little bit impersonal attitude and this makes them a little unapproachable for us. I mean, yes they are fun normally, but we feel a little bit scared during practices…" (No. 16)

The students stated that they had an informative and friendly communication with their clinical nurse trainers.

"… When we ask them any question, they are really helpful. I mean they explain what they know about the subject and talk to us like friends. In the morning, for example, when we greet them, they usually smile and say god morning to us. If they were unfriendly, I would have a negative opinion about them. For example, I would be nervous around them. But because they treat us well, we have a good communication with them…" (No. 2)

The students reported that they thought the guidelines included trivial and too long items and, therefore, they were confused, and the guidelines were based on memorization.

"Yes, I thought some of them were unnecessary if you know what I mean… We had to memorize them… What I mean is that I cannot remember these items now. For example, some of the items said, "Wearing gloves at all times is…" And this item is skipped in some other items. Um, sometimes the guidelines skip what it should tell at the beginning of a practice. And they say, "We have to wear gloves because wearing gloves removes bacteria" at the end of a practice. Well, they do not mention that at the beginning of the practice. I mean in other stuff, in other subjects. They just extend the items longer and longer. I mean the sentences are too long at times." (No. 6)

The students reported that they wrote the same things over and over, the questions were not clear, but the reflective writing activity provided feedback to the instructors and students, and they had difficulty in writing because they felt exhausted after practices.

"… For this reason, I tried to write as elaborately as possible at first. But, I started to repeat myself by the end of practice. This is because I realized that everybody finished his or her writing and the instructor was waiting for us to finish my writing… I mean few people and me tried to write as fast as possible, we were always late… This activity helps us evaluate ourselves. You know, it helps us to think about the effectiveness of our practices. We believe that it is good for self-evaluation. I mean it is an opportunity for us to reflect on our performance: "Did I do it correctly or not? How was I today? How can I be better next week? How can I improve myself in the future?" I believe it helped us in this way… Sometimes I find it complicated. I mean, even I don't understand what I m writing about." (No. 11)

Regarding the practices covered in the following years in the faculty, the majority of the students stated that they believed they could perform these practices, but they also added that they might have some difficulties.

"… I think there will be some practices that I will have difficulty in performing, but I believe I can perform them in general… For example, enema and catheter problems could be difficult for me because I've never done them before in real life. We practiced on models, but performing the same thing on a living human body is different. Now we are going to hospitals for training, but I haven't had to perform them yet… I think I may have difficulty because I've never done them before. Yes. And I'm worried that I could do a mistake. I practiced with models, but performing the same thing on a real person is different. After all, we are talking about a living human body…" (No. 14)

The study found that, in general, the students felt ready for working as nurses.

"I didn't know anything before studying here. I mean some of my friends are graduates of vocational high-school of health. I felt I knew nothing (Smiling). But, well, when I think about it, I've learnt many practices. I mean we were taught in lessons and we practiced in the skills lab. Perhaps, it was just practices with models, it's still something..." (No. 17)

Regarding their opinions on their skills laboratory experiences, the students stated that they developed self-esteem in general.

"I used to think that I wouldn't be able to anything correctly, but now I believe I can perform some practices to some extent at least… At first, I had no self-confidence. In fact, I have never had self-confidence. But I must say I'm more self-confident now… I believe I've overcome my fear. My hands would normally shake, but when I saw a friend of mine whose hands were shaking, I realized that it was because of anxiety… My hands do not shake now. I still feel frightened but not as much as I used to." (No. 5)

Discussion

This study investigated the opinions of the first-year nursing students taking "Fundamentals of Nursing" course on nursing laboratory practices.

This study found that the first-year nursing students chose nursing education mostly due to the guidance or advice of their families and parents. Similarly, it was found that guidance by family played a key role in students' preference for nursing [13]. On the other hand, few researches [14,15] showed that the nursing students in their study chose nursing profession because of employment opportunities. Research showed that the common reasons for choosing nursing as a profession are employment opportunities, advantages at university entrance exams, and family guidance. Our study compared these reasons and found that the reason for choosing nursing a profession that was reported most by the respondents was family guidance. This result could be associated by the fact that Turkish society tends to have external locus of control [16]. Individuals with internal locus of control are aware of the fact that it is them that make their own decisions, and these individuals assume responsibility for the outcomes of their decisions. Individuals with external locus of control, however, could avoid making decisions since they believe that their lives are controlled by chance or other people [17,18]. In the light of this, we could suggest that the nursing students in this study chose nursing as a profession in line with external locus of control as an extension of the general social structure.

The statements of the students on laboratory practices showed that they experienced anxiety and fear, but they gradually overcame these feelings, and they their laboratory experiences facilitated the learning process. Similarly, Mete and Uysal found that the laboratory practices in their study facilitated learning [19]. On the other hand, Levett-Jones et al. conducted structured observations and assessments of student practices and found that the students in their study experienced anxiety and stress during practices [20]. Nevertheless, Gosselin revealed that the effectiveness of simulation practices increased with the decreasing levels of anxiety [21]. In the light of this, we could suggest that the laboratory practices functioned as transitional phase for the students in this study to overcome their anxiety and fear before clinical practices. In fact, experiencing these emotions during laboratory practices could be a significant learning experience for students before meeting real patients in the real life clinical environment and it could help them develop strategies to cope with these emotions.

This study also found that the students were able to remember parenteral and self-care practices most. Nursing is a profession that has both dependent and independent roles. By using their knowledge and experience, nurses employ their independent roles so that individuals and their families can maintain and improve their health and to regain it in case of an illness and they can achieve the highest level of quality of life after discharge [22]. Parenteral practices are considered as a dependent role of nurses. Research on the perceived image of nursing showed that nursing tends to be seen by individuals in this aspect [23,24]. The most common response given by the students in this study in this respect was parenteral practices, but the students mentioned self-care practices as well.

Practicing on living bodies (e.g. draining blood, establishing vascular access) was the most common reason reported by the students among the reasons why they remembered some practices most. This result could be due to the fact that the main purpose of the simulation practices is to provide learning experiences that reflect what occurs in real life. Simulation practices also acts as a bridge filling the gap between classes and clinical environment. The more learning materials used for simulation are close to lifelike, the more positive effect they have on learning level [1]. In the light of this, we could suggest that the fact that the nursing students were provided with permission and guidance to perform invasive procedures such as draining blood and inserting vascular access on each other led to permanent learning. This result is significant in that it showed how effective the level of fidelity of the simulators to be used for laboratory practices would be on students' learning levels.

In general, the students reported that they had the opportunity to practice with sufficient and adequate equipment and models. On the other hand, the students had different opinions about the fidelity of the equipment and models, and they experienced some technical problems. Considering the fact that higher-order cognitive processes such as permanent learning and critical thinking and decision-making occur in real or close-to-lifelike learning environments [25], this result could be due to the presence of low-fidelity simulation models in the laboratory where this research was conducted. On the other hand, this study found that the students thought the learning materials (e.g. care equipment, syringes, probes etc.) were adequate, the laboratory allowed the students to know authentic healthcare equipment and materials, and the laboratory provided the students with an environment where they could overcome their anxiety.

The students stated that the laboratory provided well-balanced heating-illumination-colours, but it was inadequate in terms of air-conditioning and it had background noise. Felix et al. reported that the physical structure of the laboratory in their study was moderate, the mattresses were quite bad, but the materials were adequate [26]. Mete and Uysal reported that the nursing students in their study found the equipment and materials used adequate [19].

Although some of the students said that their communication with the course instructors was clear and informative, some other students said they experienced anxiety and restraint in this communication. On the other hand, the students reported that they had informative and friendly communication with the clinical nurses. Strand et al. found that the students expected to find a guiding and encouraging attitude [5]. This kind of attitude facilitates learning and skill performance. However, Mete and Uysal showed that some behaviour and attitude of the instructors caused anxiety and stress in the students [19]. It is essential that students should appropriately acquire psychomotor skills, which are required in the educational processes for professions focusing on individuals, and communication process should avoid anxiety and stress and provide more guidance so that permanent change can take place.

The students reported that they thought the guidelines included trivial and long items and, therefore, they were confused, and the guidelines were based on memorization. However Mete and Uysal found that the students in their study did not understand training guidelines when they read them, but they easily understood them during the laboratory practices [19]. In the light of this, we could suggest that shorter items are required to make skills guidelines more comprehensible and students need more mental preparation.

Regarding the reflective writing activity, the students reported that they wrote the same things over and over in general, and the questions were not clear, but the reflective writing activity provided feedback to the instructors and students. Reflective writing activities develop students' awareness of their individual opinions and critical and innovative thinking [5,27]. Many universities around the world utilize reflective writing activities. In this study, the students were asked to attend reflective writing sessions after each laboratory practice. The reflective writing activities were conducted weekly after laboratory practices and they were based on Gibbs' reflective cycle questions including "What happened?" "How did it make you feel?" and "How will it affect your future practice?" Johannesson et al. investigated the opinions of nursing students on the simulation practices for urinary catheterization and found that reflective writing about skills provided meaningful learning and feedback about how skills were performed [1]. The reflective writing activity in a study by Strand et al. caused the participants to recognize their individual boundaries and difficulties [5]. In our study, on the other hand, the students felt they wrote the same things over and over in the reflective writing activities following the laboratory practices every week.

Regarding the practices covered in the following years of their nursing education in the faculty, the majority of the students stated that they believed they could perform these practices, but they also added that they might have some difficulties. Similarly, Johannesson et al. reported that the students in their study needed repetition so that a target skill is accommodated [1]. In the light of this, we could suggest that the laboratory practices in our study provided the students with knowledge about professional skills, but they still needed more practice and repetition. Also, the low-fidelity level of the simulators used in the laboratory practices in this study could be the reason why the students had this kind of feelings about the practices.

Finally, regarding their opinions on their skills laboratory experiences, the students stated that they developed self-esteem in general. Similarly, Pierce and Baillie and Curzio reported that the students in their studies had an increased level of self-esteem and decreased level of anxiety after the laboratory practices [7,28]. In fact, the students in our study stated that they felt they were ready for working as nurses, but they still needed more time. In other words, the students' self-efficacy levels about nursing increased in parallel to their self-esteem about their psychomotor skills. Therefore, it is essential that the simulators to be used in nursing, which is a profession focusing on individuals, and in nursing training should be of high-fidelity. Especially in the health sector, which undergoes rapid developments and changes, it is vital that environments that provides authentic learning experiences should be created and the training process should be structured taking these issues into account in order to keep pace with the latest advancements and manage time effectively [29].

Conclusion

This study found that; nursing students have experienced some difficulties during laboratory applications that contain being anxious and fear, dissatisfaction of low-fidelity models, weakness of air-conditioning and noisy environment. And also they reported that writing materials that were used to guide their practices and opinions were too long. However, nursing students had satisfied communication with the instructors and nurses and were confident that they were able to perform practices covered in the syllabuses for the following years in the school. It was surprised that most remembered skill was self-care practice as parenteral applications.

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