ORIGINAL ARTICLE

Nursing students' perception about the Nursing Laboratory as a teaching strategy

PERCEPÇÃO DE ESTUDANTES DE ENFERMAGEM SOBRE O LABORATÓRIO DE ENFERMAGEM COMO ESTRATÉGIA DE ENSINO

PERCEPCIÓN DE ESTUDIANTES DE ENFERMERÍA SOBRE EL LABORATORIO DE ENFERMERÍA COMO ESTRATEGIA DE ENSEÑANZA

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ABSTRACT

The objective of this study is to get to know the nursing students' perception in terms of the physical, educational and human aspects of the nursing laboratory in the teaching-learning process. This is a quantitative, cross-sectional, non-experimental study. Participants were 85 students who answered to a questionnaire about the laboratory in regard to human resources, teaching resources, physical infrastructure, and accommodation and hours of operation. Regarding the physical infrastructure of the lab, the majority of students (58.8%) rated it as bad or average, and accommodation was rated between bad and extremely bad by 50.6% of the students. The lab working hours were rated from good to excellent by 63.5% of the students. The nursing specialists and monitors of the laboratory were positively rated by the students, with 87.0% and 84.9% rating them from good to excellent, respectively. According to the students, the best aspect of the laboratory was human resources.

KEY WORDS

Education, nursing.
Students, nursing.
Laboratories.
Learning.

RESUMO

Este estudo tem por objetivo conhecer a percepção de estudantes de enfermagem quanto aos aspectos físicos, pedagógicos e humanos referentes ao laboratório de enfermagem no processo ensino-aprendizagem. Trata-se de um estudo quantitativo, transversal, não experimental. A pesquisa foi realizada com 85 alunos. Um total de 58,8% dos alunos avaliou a estrutura física como ruim ou regular; já a acomodação foi avaliada por 50,6% dos alunos como ruim e péssima. Quanto ao horário de funcionamento, 63,5% dos alunos avaliaram como bom ou ótimo. Os alunos avaliaram positivamente as enfermeiras especialistas em laboratório e as monitoras com 87,0% e 84,9% de bom ou ótimo, respectivamente. A maioria dos aspectos obteve conceito bom, exceto a infra-estrutura física. O aspecto melhor avaliado foi o recurso humano.

DESCRITORES

Educação em enfermagem.
Estudantes de enfermagem.
Laboratórios.
Aprendizagem.

RESUMEN

Conocer la percepción de estudiantes de enfermería en cuanto a los aspectos físicos, pedagógicos y humanos referentes al laboratorio de enfermería en el proceso enseñanza-aprendizaje. Se trata de un estudio cuantitativo, transversal, no experimental. La pesquisa fue realizada con 85 alumnos. En cuanto a la estructura física, el 58,8% de los alumnos la evaluó como mala o regular, las comodidades fueron malas o pésimas para 50,6% de los alumnos. Respecto al horario de funcionamiento, 63,5% de los alumnos lo evaluó como bueno u óptimo. Los alumnos evaluaron positivamente a las enfermeras especialistas en laboratorio y a las monitoras, con 87,0% y 84,9% para bueno y óptimo, respectivamente. La mayoría de los aspectos obtuvo buenos conceptos, excepto los relacionados con la infraestructura física. El aspecto mejor evaluado fue el recurso humano.

DESCRIPTORES

Educación en enfermería.
Estudiantes de enfermería.
Laboratorios.
Aprendizaje.

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INTRODUCTION

Nursing is and always will be intimately associates with the technical-manual component, while being accountable for the care with health of individuals and with maintaining their quality of life. Therefore, acquiring psychomotor skills is a component included in the education program of nursing courses[1]. These skills include activities from the most simple to those of highest complexity, which involve a large amount of high-precision and coordinated movements[2].

The process of teaching and learning psychomotor skills is experienced by nursing undergraduates in the classroom, practice field and in the procedure laboratory, where training takes place before the internship in the practice field and simulations make significant contributions for the satisfaction and safety of students throughout their professional education[3].

The nursing laboratory (NL) is a room or group of rooms with mannequins, anatomic models and equipments similar to those in hospital units, but are not a copy of those units[3-5]. Several authors propose that their use is an important resource in the process of teaching and learning psychomotor skills, where the simulation permits students to make mistakes and correct themselves free from the responsibility and anxiety usually imposed by the presence of patients[3-6].

At the University of São Paulo School of Nursing (EEUSP), scientific concepts and principles related to basic nursing procedures took place in the second semester of the former course curricula, and occurred through theoretical and practical classes in the NL.

With the new curricular proposal, as of 2010, the central focus of the curricula has been nursing care in its many senses, meanings and dimensions. This is because we know that, even among ourselves, in this school, there is a univocal meaning for what we understand as care. The attempt being made is not to homogenize these comprehensions and conceptions, rather, it is to reveal them, believing that diversity, precisely, is what holds the possibility of developing nursing care[7]. At the same time, in this space of transition between the two program proposals, there is a physical and pedagogical reform of the NL at the referred institution. Hence, we understand that it is necessary to perform an evaluation related to the teaching-learning process that was developed at the NL to be coherent, promote and congregate with the new political and pedagogical project of the institution. In this sense, what should we change in the NL, as a place of practical teaching, simulation of procedures and nursing care? What is the students' perception about the teaching-learning process in the NL? How do the human, physical and pedagogical resources make it possible to develop this learning?

The purpose of the teaching-learning process in the NL is to allow students to use the knowledge they have acquired and assimilate other skills that are necessary to perform the techniques correctly. The usual routine is to perform a demonstration of the procedure with the purpose of showing the specific material and the order of steps to be followed. The student, in the laboratory, then simulates the technique with the purpose of handling the material and learning the steps. Next, in the practice fields, the students work directly with patient care; in other words, in real situations[6-8].

Nursing, as a science, in its theoretical-practical characteristic, uses mechanisms to facilitate the practice of their professional activities, which involve numerous specific movements that require promptness, referred to as psychomotor skills. Having skilful hands is one of the most valuable features of nurses and it requires competence when performing tasks[8].

Hand skills require learning and voluntary coordination of body movements and/or of the limbs to achieve the task goals. Motor capacity is the quality trait of an individual, and it is associated with the performance of various motor skills. The author also considers some motor performance variables, which include the persons promptness, the anxiety generated by the situation, the particularities of the environment and fatigue[9].

Emotional responses such as fear, insecurity, anxiety and suffering are identified even in situations simulated in the nursing laboratory, when students repeat procedures, especially invasive ones, such as the parenteral administration of drugs[10].

Besides the educational aspect, previous training in the laboratory is also effective for students from the ethical-legal point of view, as it reduces the number of errors, thus reducing patient risk in view of the students' inexperience.

Besides the educational aspect, previous training in the laboratory is also effective for students from the ethical-legal point of view, as it reduces the number of errors, thus reducing patient risk in view of the students' inexperience[11].

The purposes of the present study, considering the information presented above, is to provide the necessary support to further investigations on the teaching-learning process in the NL and compare the use of the NL in the new political pedagogical project initiated in 2010, as well as to contribute with the process in expanding the professor-student relationship interface and update the teaching-learning process in terms of learning psychomotor skills through the simulation of care and procedures.

OBJECTIVE

To learn about nursing students' perception about the physical, pedagogical and human aspects of the nursing laboratory in the teaching-learning process.

METHOD

This is a descriptive, exploratory, cross-sectional, non-experimental and quantitative study.

Scope of the Study

The study was performed with nursing undergraduates who attended the practical classes of the subjects listed below at the NL-EEUSP in 2008. The new curriculum program was established in 2010. In the former program at EEUSP, students attended practical classes in the laboratory according to the following class plan:

• 1st year (2nd semester) – Foundations of the Care Process; Administration of Drugs;

• 2nd and 3rd years (3rd to 6th semesters) – Adult and Elderly Health Nursing I, Adult and Elderly Health Nursing at the Surgery Room, Women's Health Nursing and Children's and Adolescents' Health Nursing.

• 4th year– Adult and Elderly Health Nursing at the Intensive Care Unit.

In addition to the classes included in the class programs of the aforementioned subjects, the students were free to attend the lab to practice any other class procedures, as per their interest.

Sample characteristics

The sample consisted of regular nursing undergraduates attending between the 3rd and 7th semester of the course, adding up to 227 students. First-semester students were excluded from the study because they did not use the NL in this moment of the course.

Procedures for data collection

Data collection was performed from March to May, 2008 because the students were attending classes that used the NL as a teaching strategy. The researchers informed the class coordinators about the study and presented the study goals to the undergraduates in the classroom. After the explanation, questionnaires were distributed to every student.

A total 196 questionnaires were distributed to the students, 85 of which were answered and handed back to the researchers, accounting for 37.45% of all regular students. Thirty-one students did not receive the questionnaire because they were absent in the researchers' presentation.

The students were instructed to fill out the questionnaires away from class. One of the researchers returned to the classroom one week after the questionnaires had been distributed and collected them.

For those who were interested in participating in the study but had missed the opportunity to join the group on the first scheduled date were offered a new day to turn in the questionnaire.

Data collection was performed using a specific three-part questionnaire, as follows:

Part 1- Students' characteristics, including the variables: age, gender, semester being attended, health professional, previous graduation, classes in which participated in practical classes in the NL, as some classes required using the NL;

Part 2- Students' perception regarding the use of the NL in terms of human resources (laboratory experts, professors and undergraduate monitors), didactic resources (support reading, *Col*, *multimedia*, *check-list)*, physical structure, materials and equipment, accommodation and distribution of students, availability for extra classes, working hours, length and organization of classes;

Part 3- Comments and suggestions related to the teaching strategies developed at the NL.

Ethical procedures to perform the study

The study project was appreciated by the Review Board at University of São Paulo School of Nursing (CEP-EEUSP number 683/2007) and the Free and Informed Consent Form was distributed in the classroom to every student, and any doubts about it were clarified whenever necessary.

Data treatment and analysis

The collected data were stored in a databank created using Statistical Package for Social Sciences (SPSS)® 10.0 for Windows®. A statistics professional performed the analysis.

The students' answers were grouped into categories, submitted to statistical treatment and either distributed into graphs and tables or presented descriptively, according to the levels of variable measurement. The results were evaluated by comparing them with similar studies available in literature.

RESULTS AND DISCUSSION

Eighty-five regular nursing undergraduates participated in the study, 28 (32.94%) of which were sophomores, 16 (20.01) juniors, and 40 (47.05%) seniors, out of 75, 82 and 70 regular students enrolled in 2008, respectively. The data will be presented herein either descriptively or in tables or graphs.

Regarding the students' gender, most were female (89.4%). This data has been reported in several studies addressing the teaching-learning process in nursing. Females were the majority of participants in the referred studies, accounting for over 85.0% of the sample[5-6,12-13].

As for the students' age, it ranged between 19 and 30 years, with most students being between 19 and 24 years old (84.7%). The data reveal the expected progressive increase in the students' age according to the course year. Other authors that studied the teaching-learning process in nursing have also found the prevalent age group is between 19 and

22 years[6,14-16]. Those authors studied various psychomotor skills developed by nursing undergraduates and found that the students had achieved a standard considered good for the development of their motor abilities[17].

In one study[19], in the referred age group, young adults are considered mature individuals, because through intensive practice they will guarantee efficient and continuing learning.

Table 1 - Students' perception about the physical, pedagogical and human referring to the LE - São Paulo - 2008

Aspect Evaluated	RATING											
	Terrible		Bad		Regular		Good		Great		Unanswered	
	N	%	N	%	N	%	N	%	N	%	N	%
Physical structure	-	-	15	17.6	35	41.2	28	32.9	5	5.9	2	2.4
Materials	3	3.5	5	5.9	38	44.7	33	38.8	5	5.9	1	1.2
Accommodation	10	11.8	33	38.8	31	36.5	8	9.4	2	2.4	1	1.2
Hours	-	-	7	8.2	23	27.1	38	44.7	16	18.8	1	1.2
Availability	-	-	8	9.4	22	25.9	29	34.1	23	27.1	3	3.5
Organization	-	-	2	2.4	19	22.4	44	51.8	10	11.8	10	11.8
Col/Moodle	3	3.5	12	14.1	26	30.6	34	40.0	8	9.4	2	2.4
Texts	-	-	4	4.7	24	28.2	44	51.8	12	14.1	1	1.2
Check-list	-	-	1	1.2	15	17.6	38	44.7	23	27.1	8	9.4
Slides	-	-	5	5.9	20	23.5	41	48.2	15	17.6	1	1.2
Experts	1	1.2	-	-	10	11.8	46	54.1	28	32.9	-	-
Monitors	-	-	3	3.5	7	8.2	42	49.4	30	35.5	3	3.5

Table 1 shows that most students evaluated the physical structure as bad or regular (58.8%). We believe it is due to the limited physical area of the NL, which has only two beds, and thus makes it impossible for several students to use it at the same time. From a pedagogical point of view, groups should have a maximum 15 students per bed. However, this lab has only two adult beds and the student groups in this curriculum have 40 or 80 students to be assigned to NL practices.

As to accommodation, 50.6% of students reported them as being bad or terrible, while 36.5% evaluated it as regular. This data was also reported in a previous study performed in the same laboratory, in the 1990's, in which 48.0% of students stated that the conditions of the laboratory as to its accommodations, like reduced physical area and insufficient material resources, discouraged them from attending the location spontaneously[16]. It should be emphasized that the physical area intended of the laboratory has been the same since the 1990's, with the only changes being new furniture and other more specific resources.

Students rated the working hours (63.5%) and the availability for extra classes or repetition of procedure (61.2%) as good or excellent. A study performed in a nursing laboratory related to the nursing class in the surgery room, the students reported that (35.7%) did not return spontaneously to the laboratory because it was not available[13].

Regarding human resources at the NL, this item received a positive evaluation from students, because the laboratory nurse specialists were rated as good or excellent by 87.0% of students, and monitors received the same rating from 84.9% of students.

The Laboratory Nurse Specialist is a relatively new human resource at university, whose main role is to support the development of undergraduate studies. In these classes, they help professors to follow the students in practice classes in the Nursing Laboratory, before they attend the practice field, and in coordinating the classes, performing activities such as designing self-instructional models, and the use of tools like *CoL* and *Moodle* for the teaching-learning process, among others. Nurses are assigned to four different Departments at the School of Nursing (EEUSP) and develop specific activities in the location they report to. They are also responsible for the whole administrative aspect of the NL, such as estimating and providing materials and equipment that are required for teaching, for planning the logistics of the laboratory and for the teaching strategies carried out in the laboratory. This role is relatively new at EEUSP, considering the first specialist was hired about eight years before this study.

According to the results, the evaluation of this professional was satisfactory because of the effort made towards developing new teaching strategies, with better performance by the students, as well for the availability of assisting students in programmed and extended hours not only during class periods, but throughout the undergraduate course. These professionals go through continuous training in the best practices performed in the practice fields attended by the students.

In this study, 64.7% of students reported using the Nursing Laboratory to reinforce their learning about nursing procedures and 32.9% do not use this strategy, and most (30.6%) attend the lab spontaneously. Furthermore, 22.4% attend extra classes under the recommendation of professors or the laboratory specialist. In the study performed

during the surgical room nursing classes in the laboratory, the authors reported that 76.5% of students returned to the laboratory for extra practice of the techniques they had learned[9]. In another study 85.7% returned to the NL during the period of their practice development[12].

The students' perception about the physical, pedagogical and human aspects confirms the literature results in terms of the disharmony of university education in Brazil. In Education, there is a growing need to face the challenges imposed by the changes of knowledge, in conjectures with growing complexity[20].

Still according to these authors, the current curriculum of superior education in Brazil has a design containing fragmented knowledge, one that does not take into consideration the complexity of nature and social issues. More specifically, teaching undergraduate courses in health, as performed in most institutions, has presented few indicatives of a direction that integrates teaching, work and citizenship. There are some highlights in the education and training of health/nursing professionals, which include the value assigned to theory and practice, and the development of skills for producing unique and innovating knowledge, which thus assure quality care[20].

Humanized teaching is genuinely educational and ethical[21]. Our pedagogical action, as a social practice, aims at understanding that students have unique characteristics, including psychobiological, intellectual and emotional aspects and we should promote their development and complete confidence, which is an essential step towards achieving humanized action in their professional practice[10-22]. One motion from the professor can promote self-confidence or insecurity in the student, and teaching education should not focus exclusively on the mechanical repetition of that movement, but also on understanding the value of feelings, when insecurity and fear are replaced with confidence and courage[21].

At university there was an effort to hire Laboratory Specialist to establish a faculty-specialist partnership to develop practical teaching, as well as to, in some occasions, assign those professionals to theoretical-practical fields of learning to benefit and prepare the field for teaching and integrating the academic education to the practice settings.

Professional education and training, specifically in nursing, requires the development of multiple and interdisciplinary academic actions, with a humanist and ethical foundation and a capacity for criticism from the perspective of comprehensive care, which presupposes the development of professionals who are able to face complex problems that appear in the today's society, more specifically, in the health area[20].

At university, the teaching-learning process involves faculty, who are professors and researchers at the same time, and are characterized by high productivity in research and also strong involvement in extension activities. Teaching, research and extension at university comprise the tripod of faculty work. Students stand on the other side[7].

Today, the teaching-learning process occurs through the relationship among faculty, students and laboratory specialists. This process may take place by mans of goals, methods and new instruments and forms of evaluation, which are coherent with the initial nursing education and training; i.e., the first four years of undergraduate studies, which then lead to the consolidation of their professional life throughout at least thirty years of work[7,9,10,20].

The current proposal for the nursing curriculum consist of three cycles. The initial cycle aims at the identification of the health needs of the population. The intermediate cycle is focused on the implementation of the responses to the health care needs and management. In the complementary cycle, care and management receive a closer approach. In both cycles the idea is to intensify practical activities so as to keep in touch with the working world[7].

Therefore, it is necessary to develop theoretical and practical teaching in the nursing laboratory and it implies the need to update and adjust this teaching space that is inserted in the new curricular proposal of EEUSP.

Learning is made effective by the visual and mechanical memory associated with building knowledge individually in an attitude of creating and recreating one's own structure to change reality[10].

The nursing laboratory is an essential space for students to learn nursing and care procedures that will surely reflect on their performance in other classes and in their professional life.

Considering the obtained results we emphasize the importance of using the nursing laboratory to demonstrate procedures through simulations, thus contributing with the development of psychomotor skills before the students have any real contact with patients.

CONCLUSION

According to the data obtained in this study and also the context in which it was developed, it can be affirmed that the perception of nursing undergraduates about the teaching-learning process and the use of the NL pointed at a poor or regular physical structure, according to 58.8% of the responses. The laboratory is currently going through changes in its physical structure, a change in buildings in fact, and this shows the institution's commitment to teaching and research.

Most students (63.5%) referred to the NL working hours (from 7am to 6pm) as good or excellent. The working hours vary according to the period of the year and the classes that are being held, i.e., mornings are usually used for regular classes and afternoons for some other classes, especially extra classes or for when students come to the laboratory spontaneously.

There were five laboratory nurse specialists working in one of the four university departments at time of study. They worked with the aforementioned classes and developed supporting undergraduate study activities. Most students

(87.0%) evaluated the concept between good and very good. The same outcome was obtained in the students' evaluation (84.9%) concerning the two undergraduate monitors, who worked under the supervision of the specialists.

Furthermore, 67.4% of students reported having returned to the NL for extra classes, 30.6% of which sought the lab spontaneously, using an appointment system that would register the student's name, the ongoing class, the procedure to be studied and practiced and the professor responsible for the class.

Pedagogical resources like *Col, Moodle* were evaluated as good according to 40% of the students' responses. Other resources, like slides, basic and complementary texts, and procedure check-lists were considered good by the students who participated in this evaluation.

FINAL CONSIDERATIONS

Learning and teaching in the Nursing Laboratory requires dynamism among human, material and physical resources. Students see the availability and motivation of human resources involved in this process as positive, though limited by the physical and material resources.

The teaching-learning process takes place through the interaction between the human, physical and material resources with the students.

The Nursing Laboratory offers the possibility of continuous approaches with nursing care and therefore should be thought and planned to meet the demands related to providing permanent updates on nursing care.

This study allowed us to reflect on the role of professors and laboratory specialist in providing quality education in the initial stage of the nurses' development.

We believe that the nursing laboratory is an indispensible resource in the teaching-learning process. Continuous evaluation of this resource is necessary to make it stronger by providing a visible and well structured area in the initial education of nursing students.

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