

# Teaching-learning strategies in nursing - analysis using the Glasgow Coma Scale\*

ESTRATÉGIAS DE ENSINO-APRENDIZAGEM NA ENFERMAGEM: ANÁLISE PELA ESCALA DE COMA DE GLASGOW

ESTRATEGIAS DE ENSEÑANZA Y APRENDIZAJE EN ENFERMERÍA: ANÁLISIS POR LA ESCALA DE COMA DE GLASGOW

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## ABSTRACT

Using the Glasgow Coma Scale (ECGI) as a subject, this paper aims to analyze and verify the apprehension of knowledge towards the teaching-learning and self-learning offered to nursing workers, and to check the degree of knowledge acquired during the process and possible results stemming from the nursing student/nursing worker association. This descriptive, quantitative-based study counted on the participation of 62 currently enrolled students in the first semester of the 4th year of nursing. The following teaching-learning strategies were used: expositive classes with the use of slides and videotape, and a basic text. Among participants, 41.9% were nursing workers; 61.3% informed to have taken care of patients with high alteration of the consciousness level, predominantly located in their working group. Statistically, there has been a successful improvement in the percentage of correct actions after the expositive class and videotape. Self-learning results showed no alteration either. Intergroup correlations displayed no disparity in the degree of acquired knowledge.

## KEY WORDS

Teaching.  
Learning.  
Nursing.  
Education, nursing.  
Glasgow Coma Scale.

## RESUMO

Usando como tema a Escala de Coma de Glasgow (ECGI), este estudo objetivou analisar e verificar a retenção do conhecimento frente às estratégias de ensino-aprendizagem e autoaprendizado oferecidas, e verificar o grau de conhecimento adquirido neste processo e a possível associação entre ser ou não aluno que trabalha na enfermagem. Estudo descritivo de abordagem quantitativa. Participaram 62 alunos regularmente matriculados no primeiro semestre do 4º ano de enfermagem. As estratégias de ensino-aprendizagem utilizadas foram: aula expositiva com diapositivos e videotape e texto-base. Dos participantes, 41,9% eram trabalhadores na enfermagem; 61,3% informaram ter cuidado de pacientes com alteração do nível de consciência, com predomínio no grupo em que trabalha. Houve incremento estatisticamente significativo no percentual de acerto após a aula expositiva e o videotape, não havendo alteração no resultado após o autoaprendizado. Não houve diferença no grau de conhecimento adquirido entre os grupos.

## DESCRIPTORIOS

Ensino.  
Aprendizagem.  
Enfermagem.  
Educação em enfermagem.  
Escala de Coma de Glasgow.

## RESUMEN

Usando como tema la Escala de Coma de Glasgow (ECGI), este estudio objetivó analizar y verificar la retención del conocimiento frente a las estrategias de enseñanza aprendizaje y auto aprendizaje ofrecidas; y, verificar el grado de conocimiento adquirido en ese proceso y la posible asociación entre ser o no alumno que trabaja en enfermería. Estudio descriptivo de abordaje cuantitativo. Participaron 62 alumnos regularmente matriculados en el primer semestre del 4º año de enfermería. Las estrategias de enseñanza aprendizaje utilizadas fueron: clase expositiva con diapositivas y videotape y texto base. De los participantes, 41,9% eran trabajadores de enfermería; 61,3% informaron haber cuidado de pacientes con alteración del nivel de conciencia, con predominio en el grupo que trabaja. Hubo un incremento estadísticamente significativo en el porcentaje de aciertos después de la clase expositiva e videotape, no hubo alteración en el resultado después del auto aprendizaje. No hubo diferencia en el grado de conocimiento adquirido entre los grupos.

## DESCRIPTORIOS

Enseñanza.  
Aprendizaje.  
Enfermería.  
Educación en enfermería.  
Escala de Coma de Glasgow.

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## INTRODUCTION

The learning process plays an important role in the education of the nursing undergraduate student. Besides educating the individual as a citizen capable of critical thinking and preparing him for a professional activity, it also prepares him for the search for new knowledge through reading and researching, developing not only his investigative ability but also his ability to learn, which will promote and disseminate knowledge, thus creating conditions for a permanent education<sup>(1-2)</sup>. This reality is perceived in the competencies included by the National Curricular Guidelines for Nursing Courses in Art. 4º, item VI – where permanent education prescribes that professionals must be able to learn continuously, both in their education and in their practice<sup>(3)</sup>.

The teaching-learning dyad encompasses an interactive process that is formed by the actions of the professor, as well as actions performed by the students; the interaction between the person who teaches and the one who learns occurs as the behavior of one of them stimulates the behavior of the other<sup>(4)</sup>. Nevertheless, one of the great challenges for the development of the teaching-learning process, in terms of *learning how to learn*, is based on the learning experiences that allow the construction of strategies to help the student use, consciously and productively, the learned concepts, and that is the reason why it is important to recognize the profile of this student.

The characteristics of the nursing undergraduate student show wide diversity, since it is possible to find students who work and who do not work in the same classroom, with a range of personal and professional experiences, knowledge level, demands and objectives.

In addition, some authors do not agree regarding the use of key concepts such as strategies, techniques and resources<sup>(5-7)</sup>. The means used by the professor in the classroom to plan and facilitate the students' learning are considered teaching-learning strategies for the operationalization of the terms used in this study, whereas resources are the instruments that help in the execution of the planning, such as audiovisual instruments (television, videotape, multimedia projector, etc.).

In the nursing course, the learning process may be facilitated by the use of several strategies aimed at the qualification of the students. Therefore, the students have the opportunity to develop abilities and practice them in controlled or simulated situations through nursing procedures in laboratories with videotapes and anatomic models. Later, the student is introduced to the clinical practice, which is fundamental in nursing in order to train nurses in the procedures in a real situation.

For the execution of these activities, there are factors that pose difficulties in acquiring an appropriate field for the clinical practice, either because of the competition

among schools, or due to the inexistence or insufficient number of clinical cases necessary for the learning process.

A study presented an overview that was not very optimistic, in which students showed a decrease in their school performance, thus imposing the need for professors to use strategies to facilitate their learning process, formulating the teaching-learning process based on the knowledge of the socio-demographic profile, school life and aspirations regarding the career of the students.<sup>(8)</sup>

The problem may be confirmed in teaching-learning studies<sup>(9-10)</sup> regarding the use of the Glasgow Coma Scale<sup>(a)</sup> performed with the participation of graduated nurses. The authors observed that, in measuring the knowledge level, the participant nurses who worked in the emergency service received a percentile score between 50% and 60% in the knowledge test about the scale in the pre-evaluation stage.

Considering this situation and the concern about the education of a competent nurse in a globalized world, which increasingly demands the professional to be capable of autonomous thought and critical thinking, creative, educated, knowledgeable about computers and able to prioritize continuing education, life quality and environment preservation, some questions regarding the teaching-learning process in the nursing course arouse:

- Is the use of a dialogued expositive class, with resources such as slides and videotapes, enough for the student to learn?
- Does the student seek to self-learn by reading materials about the approached subject?
- Which teaching strategies are more efficient to help the retention of the teaching-learning process?
- Does the fact that the student has previous experience in the nursing practice influence his self-learning?

These questions motivated the authors to carry out a study with undergraduate students, employing varied strategies aimed at improving the teaching-learning process regarding the application of the Glasgow Coma Scale.

## OBJECTIVES

The study purposes are to:

- Analyze the retention of knowledge, after an expositive class with slides and the presentation of a videotape with a simulation;
- Determine the retention of knowledge in face of self-learning strategies (videotape with a simulation and text

<sup>(a)</sup> Instrument used worldwide for the global evaluation of the level of consciousness, which is an important procedure for determining the extent of head injury or illness.

about the class) offered to complement and strengthen the knowledge;

- Determine the level of knowledge acquired during this process and its possible association with being a student who works in nursing.

## METHOD

This descriptive study uses a quantitative approach. It was developed in the nursing course of a school located in the Vale do Paraíba, in the state of São Paulo. Once the study location was defined and the institution had formally authorized the data collection, the project was submitted for appraisal and was approved by the Committee of Ethics in Research (CER) of the University Guarulhos, under the number SISNEP/88. The study enjoyed the participation of 65 students who were regularly registered in the 4<sup>th</sup> year of the nursing course. Data collection was carried out by the researchers in February, 2006.

The teaching-learning strategies used in this study were: a dialogued expositive class with slides and a videotape regarding the subject to be completed in about 120 minutes (development of the subject and clarification of doubts by the researcher); a base text was given to each student and the videotape used in the class was available for the students who wanted to watch it again.

At first, data collection was carried out in the morning period. Students were received by the researcher in the auditorium of the university and, once all participants were seated, data collection was initiated by presenting the study proposal and the invitation for their participation. Their anonymity was assured and they were guaranteed they would not suffer any disadvantage by not participating or abandoning the study at any time; their rights to question or express doubts were also assured, as well as the inexistence of any financial onus on the participants.

The researchers then requested the students who were interested in participating in the research to read and sign the Term of Free and Clarified Consent, which was provided in two copies (one for the student and the other for the researcher). Once this consent was signed, students received a sheet of paper with numbers from 1 to 65 and chose one of them to be used as their record number for each instrument of data collection, as their only means of identification. This identified list was kept and controlled by a professor from the institution.

Students were given demographic data forms to complete, and then they received the card with the Glasgow Coma Scale. They were informed that this instrument would be theirs and should be used during the entire course of the study.

A knowledge test with twenty multiple-choice questions was applied at three separate times during data collection. They were identified as Knowledge Test I, II and III – it is

worth mentioning that this test was previously validated in a master's degree dissertation<sup>(10)</sup>.

After delivering Knowledge Test I, the researchers explained to the students that all twenty questions had only one correct answer and that, in case they did not know the correct answer, they should leave them unanswered. At the end of Knowledge Test I, students had a break and were offered something to eat. After the break, the participants attended an expositive class with slides for an estimated duration of 50 minutes.

The explanation was followed by the presentation of the videotape with simulations using the Glasgow Coma Scale (GCS1) and the clarification of any questions by the researcher. This part took an additional 50 minutes. The second knowledge test (Knowledge Test II) was then distributed, and the same instructions as in Knowledge Test I were given (the twenty questions had only one correct answer and in case they did not know the answer, they should leave them unanswered). Once Knowledge Test II was finished, every student received a base text<sup>(10)</sup> of the class with the instruction that reading it (place, frequency and form) was the student's choice. There was also an instruction stating that the videotape would be available.

The electronic devices (television and videocassette recorder) and the videotape were available for the students for two days. During this period, two students from the 3<sup>rd</sup> year of the nursing course were in charge of the devices, videotape and television, and took note, on an appropriate sheet of paper, of the identification of each student that showed up to watch the videotape and the number of times they watched it.

The third part of the study occurred on the fifth day of the data collection process in the auditorium of the hospital, where the participants developed their curricular internship. Data were collected in the morning and in the afternoon, using the two last hours of the internship program. Once all students from the morning and the afternoon periods were sitting in the auditorium, the researchers confirmed that everyone had their GCS1 card with them, gave them Knowledge Test III about the GCS1 and provided the same instructions as before.

At the end of Knowledge Test III, they proceeded to the instructions on how to complete the forms: *previous experience regarding the subject, and knowledge after the expositive class and the presentation of the videotape*, which were distributed afterwards, in this sequence, and at their completion were handed back.

A period of 15 minutes was reserved at the end of data collection for clarifying any possible doubts about the subject and about the Knowledge Tests. Following the collection, the researcher gave thanks to all participants for their collaboration and committed herself to presenting the results of the study at a later date.

## Statistical Treatment

The following software was used in the execution of the statistical treatment: Microsoft Excel® Version 2000 for the database administration; SPSS for Windows Version 10.0®. In the analysis, the following tests were used: Pearson's Chi-Square Test, Fisher's Exact Test, Kolmogorov-Smirnov and the non-parametric of Mann-Whitney. For the analysis of the evolution of the percentile score in the knowledge tests I, II and III, the methodology of the Analysis of Variance (ANOVA) was applied with measures repeated with a factor<sup>(11-13)</sup>.

## RESULTS AND DISCUSSION

The study counted the participation of 65 students, who were regularly registered in the 4<sup>th</sup> year of the nursing course, but on the day of data collection two students were absent and another one had to leave later, during the collection. Therefore, the study population was comprised of 62 students.

The categorization of the studied population showed that 39 (62.9%) students had previous professional education in nursing and 26 (41.9%) stated they were working in the nursing field. Similar to the present study, other studies have also demonstrated that a large proportion of the nursing undergraduate students have previous professional education<sup>(8,14-15)</sup>. Nevertheless, this reality is more frequently observed in private institutions. It is probable that these students (nursing technicians and assistants) look to the nursing course in an attempt to advance in their professional activities and to seek the recognition of the profession, since these categories are still poorly valued and receive low remuneration in the health care arena.

Considering that one of the purposes of the present study was to determine whether there was an association between working in the nursing profession and the level of acquired knowledge, the authors decided to proceed to the analysis of the results by dividing the population in two groups: thus, the group of people who work in nursing comprised 26 (41.9%) students and the group of people who do not work in nursing included 36 (58.1%) students.

**Table 1** - Characterization of the students according to demographic data - São Paulo - 2006

Variables	Work in Nursing						Statistical Treatment p<0.05	
	Yes		No		Total			
	N	%	N	%	N	%		
Gender	Male	6	(23.1)	4	(11.1)	10	(16.2)	Fisher's Exact Test P=0.297
	Female	20	(76.9)	32	(88.9)	52	(83.8)	
	<b>Total</b>	<b>26</b>	<b>(100.0)</b>	<b>36</b>	<b>(100.0)</b>	<b>62</b>	<b>(100.0)</b>	
Age (years)	Min./max.	23/53		19/43		19/53		Mann-Whitney P=0.001
	Mean	31.3		25.3		27.8		
	SD	8.2		6.5		7.8		
	<b>Median</b>	<b>28.0</b>		<b>23.0</b>		<b>24.0</b>		
Marital Status	Single	20	(76.9)	27	(75.0)	47	(75.8)	Fisher's Exact Test P=0.613
	Married	5	(19.2)	5	(16.7)	10	(16.1)	
	Divorced	1	(3.9)	4	(8.3)	5	(8.1)	
	<b>Total</b>	<b>26</b>	<b>(100.0)</b>	<b>36</b>	<b>(100.0)</b>	<b>62</b>	<b>(100.0)</b>	

Regarding the gender variable, it is worth highlighting that despite the fact that most (83%) of the studied students were female, it is possible to observe a greater concentration of male students in the group of people who already worked in nursing, probably seeking a better qualification. There was no statistically significant association ( $p>0.05$ ) between the work and the gender of the studied participants. This study is not different from others in which the female gender constitutes around 90% of the students<sup>(8,14-18)</sup>, which reinforces the idea that nursing, despite the changes originating from our values, is still a predominantly female profession.

A statistically significant difference may be observed in terms of age. The group of students who worked in nursing presented a higher mean age, compared to the group of people who did not work in nursing. Through the median, the difference was smaller. Studies came to the conclusion that the prevailing age range is between 20 and 23 years old, counting from the date they enter the course<sup>(8,14,16-17)</sup>. Even though this is the reality in the nursing courses from public institutions, the opposite is observed in the courses from private institutions, where an advanced age is a constant – probably due to the social status of the students, the delay in finishing the fundamental education, the need

to contribute to the family income, or the decision to take a technical course in order to enter the work market faster and support themselves<sup>(15,17-18)</sup>.

Regarding marital status, the predominance occurred in the single attribute, and its distribution was regular between the two groups. There was no statistically significant association ( $p>0.05$ ) between the work and the marital status of the studied participants. In the general context, there is an expressive number of single students, which is a result that was also found in other studies<sup>(8,16,18)</sup>. Nevertheless, there is a greater concentration of married and divorced students in private institutions<sup>(17)</sup>.

In terms of previous education and professional activity, it was observed that in the group of 62 studied participants, 39 students had a professional education, indicating a regular distribution between the nursing assistant (46.2%) and the nursing technician (53.8%). It is worth highlighting

that among those 39 students with a professional education in nursing, 26 worked in the area, 06 worked in other areas such as a shop, library or school, and 07 students did not work. The average time of experience in nursing was 8 years and 6 months. As for the work field, most of them worked in critical care and trauma units (59.3%).

Table 2 presents an equitable result with a slight predominance of students who did not attend any classes (51.6%), and this predominance (55.6%) only persists in the group of people who do not work. However, there was no statistically significant evidence of an association ( $p>0.05$ ) between the groups and previous experience in the subject. There was a predominance of students who have not read any material about the subject (66.10%), both in the group of people who work and those who do not work in nursing, but there was no statistically significant difference between the groups ( $p>0.05$ ).

**Table 2** - Previous experience of the students in the subject evaluation of the consciousness level - São Paulo - 2006

Type of experience in the subject (N=62)		Work in Nursing						Statistical Treatment (p<0.05)
		Yes		No		Total		
		N	%	N	%	N	%	
Have you attended any expositive class?	Yes	14	(53.8)	16	(44.4)	30	(48.4)	$\chi^2$ p=0.465
	No	12	(46.2)	20	(55.6)	32	(51.6)	
	<b>Total</b>	26	(100.0)	36	(100.0)	62	(100.0)	
Have you read any Yesilar text on the subject?	Yes	10	(38.5)	11	(30.6)	21	(33.8)	$\chi^2$ p=0.516
	No	16	(61.5)	25	(69.4)	41	(66.2)	
	<b>Total</b>	26	(100.0)	36	(100.0)	62	(100.0)	
Have you taken care of a patient with a change in the level of consciousness?	Yes	19	(73.1)	19	(52.8)	38	(61.3)	$\chi^2$ p=0.105
	No	7	(26.9)	17	(47.2)	24	(38.7)	
	<b>Total</b>	26	(100.0)	36	(100.0)	62	(100.0)	
Have you evaluated a patient with a change in the level of consciousness? (n=38)	Yes	10	(50.0)	3	(16.7)	13	(34.2)	$\chi^2$ p=0.031
	No	10	(50.0)	15	(83.3)	25	(65.8)	
	<b>Total</b>	20	(100.0)	18	(100.0)	38	(100.0)	

These data point out a concerning fact, since the study subjects are undergraduate students from the 4<sup>th</sup> year of the nursing course and, according to the curricular program of the school, the subject had already been approached in both theory and technique in the 2<sup>nd</sup> year of the course. Nevertheless, it was observed that among the 62 students, 38 (61.3%) stated they have already taken care of patients with a change in their level of consciousness, and this result prevailed in the group of people who work in nursing, which is coherent, but no statistically significant association ( $p>0.05$ ) was found between the groups. Among these

38 students who stated they have already taken care of patients with a change in their level of consciousness, 13 students actually evaluated the patient, and most of them were in the group of people who work in nursing. A statistically significant association ( $p<0.05$ ) was confirmed in this variable.

Regarding the method used to evaluate the level of consciousness, 10 students stated they used the GCSI and 03 used other methods. Among those 10 students who used the GCSI, 07 are students who work in nursing and 03 are

students who do not work in nursing. The 03 students who used other methods to evaluate the consciousness level are students who work in nursing, but they neglected to mention which methods they used. As for the videotape about the subject, only 06 students said they have already watched one and considered it satisfactory.

In light of this situation, some questions arose :

- How did these students care for this type of patient, if most of them did not know the methods for evaluating the level of consciousness ?
- How did they perform the nursing process, if that means they need to handle the care, nursing diagnostics and prescription?

The fact that impresses most is that there is no statistically significant difference between the groups in terms of having taken care of patients with a change in their consciousness level, mainly due to the fact that most of the people who work (59.3%) do so in critical care/trauma units. In ad-

dition, these students have a professional course background and, among the 39 students, 21 were nursing technicians. It is worth remembering that this subject is also approached in the curricular program of this technical course.

Figure 1 shows the retention of knowledge after an expositive class with slides, which evidences a significant increase in the percentile score, from T I to T II and from T I to T III, with a total score increase of 47.9% to 77.18% and to 76.45% in the groups of students, a fact that is probably explained by the class attended before knowledge test II. This test used the dialogued and expositive class, and also the life experience of the student's clinical practice, and achieved a positive result with this strategy. This result can also be explained based on the study of Socondy-Vaccum Oil Co. regarding knowledge retention, which came to the conclusion that retention represents 50% of what people see and hear and 70% of what people listen and discuss. If the teaching method chosen is visual and oral simultaneously, the student is able to retain 85% of knowledge until 3 hours later<sup>(11)</sup>.

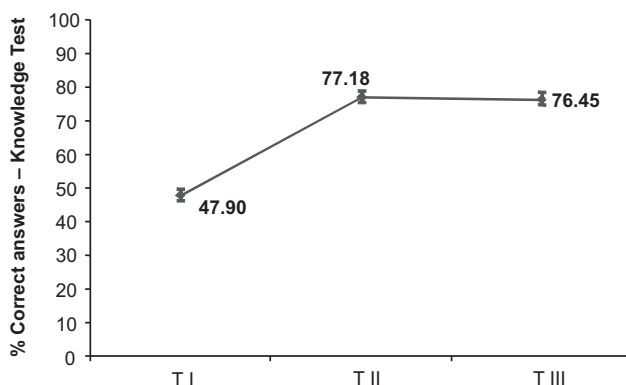


Figure 1 - Students' percentile scores in the tests T I, T II and T III - São Paulo - 2006

Another reason for the positive result was the use of the videotape as a resource to complement an expositive class. It is a fact that the video has its place in the teaching-learning process; it enriches the classroom environment as

it may bring images and sounds of things that cannot be present in that time and space, besides offering an aesthetic and sensitive dimension to the communication process that takes place in the classroom.

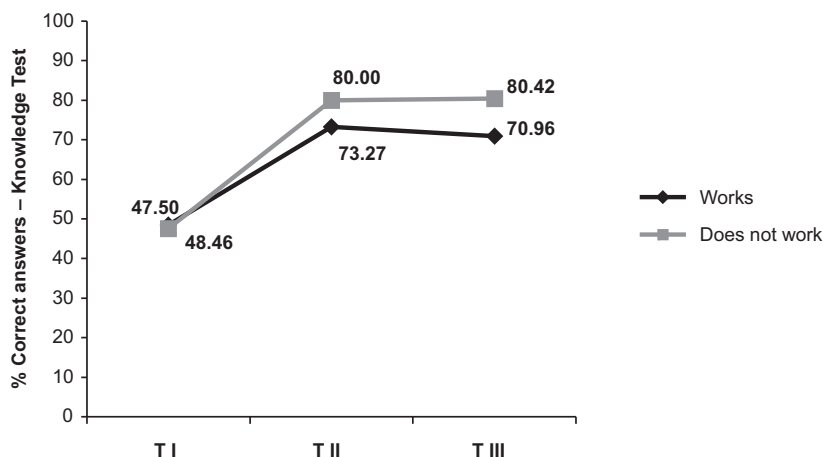


Figure 2 - Percentile score of students who work and do not work in nursing in the tests T I, T II and T III - São Paulo - 2006

In Figure 2 it is possible to observe that, regarding the percentile score in the knowledge tests, both groups are similar at the beginning of the study, but later the group of students who do not work presented a higher percentile score in T II and T III, compared to the group of students who work. However, the researchers expected the groups to have better results in this last knowledge test, scoring close to 100%, not only due to the strategies offered for the self-knowledge search, but also due to the fact that this procedure constitutes a fundamental resource for the nursing care of severely ill patients with changes in the level of consciousness, a

situation in which the nurse cannot lose sight of the basic care priorities.

Table 3 shows that 58.1% of the students read the provided base text, and there was a discrete predominance of those belonging to the group of students who work in nursing. However, there was no statistically significant association between the group of students who work and those who do not work in nursing regarding the text reading. This result is also found in another study, in which 45% of the nurses participating in the research stated they did not read the provided text even though the approached subject related to their professional activity<sup>(10)</sup>.

**Table 3** - Experience of the students after the dialogical expositive class and the presentation of the videotape - São Paulo - 2006

Text Reading		Work in Nursing				Total		Statistical Treatment ( $p < 0.05$ )
		Yes		No		N	%	
		N	%	N	%			
Have you read the text? (N=62)	Yes	16	(61.5)	20	(55.6)	36	(58.1)	$\chi^2$ p=0.795
	No	10	(38.5)	16	(44.4)	26	(41.9)	
	Total	26	(100.0)	36	(100.0)	62	(100.0)	
How many times? (N=36)	1	10	(62.5)	16	(80.0)	26	(72.2)	
	2	4	(25.0)	4	(20.0)	8	(22.2)	
	3 to 5	2	(12.5)	0	(0)	2	(5.6)	
	Total	16	(100.0)	20	(100.0)	36	(100.0)	

Regarding the videotape, even though the resource was available for two days, in a room that was reserved for this purpose, none of the students showed up to watch it, saying they did not have time to do so.

The data collected indicates the lack of interest of the students in the search for information to complement and reinforce the offered education. A teaching strategy does not include quick readings and there is no magic to retaining knowledge. It is not enough to retain precious information for some time. Effective study must stimulate the desire to learn always, otherwise the teaching-learning process will produce students, future qualified professionals, without the capacity for an efficient performance.

## CONCLUSION

The present study allowed the authors to come to the following conclusions:

- Regarding the retention of knowledge, after expositive class with slides and the presentation of a videotape with a simulation, there was a statistically significant increase in the percentile score, observed between T I and T II and kept between T I and T III, measured after 5 days ( $p < 0.05$ ).

- Regarding the retention of knowledge in face of self-learning strategies (videotape with simulation and base text about the class) offered to complement and strengthen the knowledge, there was no statistically significant increase in the percentile score, observed between T II and T III, both in the group of people who work and in the group of people who do not work in nursing ( $p > 0.05$ ). This fact agrees with the negative response of the groups towards the strategies offered, since only 58.10% of the students stated they read the text and 100% of them said they did not watch the videotape, due to lack of time.

- As for the level of knowledge acquired in this process and its possible association between a student who worked or did not work in nursing, statistically, there was a similarity between the groups of students ( $p > 0.05$ ). The groups were homogenous ( $p > 0.05$ ) in terms of gender, marital status, the fact of having attended an expositive class about the subject or read a similar text, as well as having taken care of patients with a change in the level of consciousness. In terms of age and the fact of having evaluated patients with a change in the level of consciousness, there were statistically significant differences ( $p < 0.05$ ). Regarding the age, even though the group who worked in nursing was older, both groups were within the median and mean of young adults that fall under the age range of 20 to 39 years old.

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