SIMULAÇÃO REALÍSTICA COMO MÉTODO DE ENSINO NO APRENDIZADO DE ESTUDANTES DA ÁREA DA SAÚDE

REALISTIC SIMULATION AS A METHOD OF TEACHING IN THE LEARNING OF THE HEALTH FIELD STUDENTS

SIMULACIÓN REALÍSTICA COMO MÉTODO DE ENSEÑANZA EN EL APRENDIZAJE DE ESTUDIANTES DEL ÁREA DE LA SALUD

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RESUMO

Objetivo: Avaliar o conhecimento, a satisfação e autoconfiança de estudantes de cursos de graduação em Enfermagem e Medicina, que participaram da simulação realística. **Métodos:** Trata-se de estudo quase experimental, exploratório e analítico, sobre a utilização do método de ensino tradicional com aula expositiva e método de ensino com simulação realística. Para coleta dos dados, utilizou-se formulário de caracterização dos participantes, avaliação de conhecimento e Escala de Satisfação dos Estudantes e Autoconfiança na Aprendizagem. Análises descritiva e univariada foram conduzidas. **Resultados:** A cada método de ensino utilizado houve ganho de conhecimento dos participantes (p<0,001). Em relação à escala de satisfação e autoconfiança, os estudantes demonstraram satisfação e autoconfiança com a simulação realística (p<0,001). A integração do método tradicional com simulação, teoria e prática mostrou-se eficaz para a aquisição e, consequentemente, evolução do conhecimento. **Conclusão:** A simulação é um método que permite aprimorar o conhecimento do estudante e proporcionar maior satisfação e autoconfiança na aprendizagem.
Descritores: Ensino; Exercício de simulação; Triagem; Simulação de paciente.

ABSTRACT

Objective: To evaluate the knowledge, satisfaction, and self-confidence of undergraduate students of Nursing and Medicine, who participated in the realistic simulation. **Methods**: This is a quasi-experimental, exploratory, and analytical study about the use of the traditional teaching method with expository class and teaching method with realistic simulation. To collect the data, the participants' characterization form, knowledge assessment and Student Satisfaction Scale and Self-confidence in Learning were used. Descriptive and univariate analyzes were conducted. **Results:** Every teaching method used there was gain of knowledge of the participants (p <0.001). Regarding the satisfaction and self-confidence scale, students demonstrated satisfaction and self-confidence with realistic simulation (p <0.001). The integration of the traditional method with simulation, theory, and practice proved to be effective for the acquisition and, consequently, evolution of knowledge. **Conclusion:** The simulation is a method that allows to improve the knowledge of the student and to provide greater satisfaction and self-confidence in learning.
Descriptors: Teaching; Simulation exercise; Screening; Patient simulation.

RESUMEN

Objetivo: Evaluar el conocimiento, la satisfacción y autoconfianza de estudiantes de cursos de graduación en Enfermería y Medicina, que participaron de la simulación realista. **Métodos:** Se trata de un estudio cuasi-experimental, exploratorio y analítico, acerca del uso del método de enseñanza tradicional con clase expositiva y método de enseñanza con simulación realista. Para la recolección de los datos se utilizó formulario de caracterización de los participantes, evaluación de conocimiento y la Escala de Satisfacción de los Estudiantes y Autoconfianza en el Aprendizaje. Se realizó un análisis descriptivo y univariado. **Resultados:** A cada método de enseñanza utilizado hubo gano de conocimiento de los participantes (p <0,001). En cuanto a la escala de satisfacción y autoconfianza, los estudiantes demostraron satisfacción y autoconfianza con la simulación realista (p <0,001). La integración del método tradicional con simulación, teoría y práctica se mostró eficaz para la adquisición y, consecuentemente, evolución del conocimiento. **Conclusión:** La simulación es un método que permite mejorar el conocimiento del estudiante y proporcionar mayor satisfacción y autoconfianza en el aprendizaje.
Descriptores: Enseñanza; Ejercicio de simulación; Triaje; Simulación de paciente.

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INTRODUCTION

In health education, a series of changes, additions and new trends in relation to the teaching-learning process notes to the adoption of advanced methods[1]. This requires from teachers to rethink, reassess and rebuild their pedagogical practice, seeking new teaching strategies capable of improving the results of learning and providing subsidies for the formation of critical-reflective individuals, with autonomy of thinking their actions and choices, able to change themselves and their context[2].

The association of different teaching strategies in health those manage theory and practice has been cited as an effective mechanism in higher education, able to train professionals to be more critical, reflective and prepared for professional performance, provided with the expected maturity by society and the labor market[3].

The realistic simulation is seen as an innovative and effective method that develops the relationship between theory and practice of the student body in a safe environment, offering better opportunities for learning and training, contributing to the training[4]. The last step of the simulation allows a reflective discussion (debriefing) about the situation occurred, of learning and of decisions taken, encouraging critical thinking and reflective of the student, consolidating their knowledge[5].

The simulation in health professional education gives students the opportunity to develop varied skills and competencies vital in a controlled and protected environment. It allows errors and professional growth, without risking the safety of the patient[6].

In Brazil, the use of realistic simulation (RS) is new in universities, medical schools and other health areas. A study of integrative review showed that there is a need for engagement of the faculty, to ensure the implementation of this method of teaching in a balanced way, ensuring the strength of the teaching-learning process[4]. It is in the literature that the simulation provides useful opportunities to reduce the risks for patients and students, improve the competence and confidence of students, increase patient safety, and reduce the costs of health care in the long term. However, strong studies are necessary to verify that the training in simulation really improves the outcome of patients[7]. Another need pointed out is the inclusion in the researches of diversified population in simulation scenario[8], as students from different courses and training in service with different professional categories.

Considering the high financial cost for the creation and maintenance of a simulation laboratory[7], as well as the demands of the use of innovative methods in teaching health, we chose to carry out this study, which dealt with, from the assessment of the students, the use of different teaching strategies.

The theme chosen for work was urgency and emergency, since the excess of people on the doors of urgencies is considered a public health problem, both at national and international levels[9], and that the professional active in this sector must demonstrate agility, skill, ability to establish priorities and act conscientiously and safe[10]. The use of the System for Screening of Manchester (SSM), in risk classification classes as a styling protocol, aims to reorganize these services, ensuring that patients do not expect more than the safe time for the first medical care, avoiding damage arising out from waiting[9].

Thus, the objective of this study was to evaluate the knowledge, satisfaction, and self-confidence of students of undergraduate courses of Nursing and Medicine, who participated in the realistic simulation.

METHODS

It is a quasi-experimental study, exploratory and analytical, on the use of traditional method, with expositive and simulated intervention, conducted with students of undergraduate courses in nursing and medicine of the Federal University of Vales do Jequitinhonha and Mucuri (UFVJM), Campus Diamantina, Minas Gerais - Brazil.

The data collection carried out during the I Workshop on Risk Classification in Urgency and Emergency, using realistic simulation, promoted by the Professional Master's Program in Health Education in partnership with the Department of Nursing of UFVJM. To assess the students' knowledge, there was applied the same test, 14 questions with weight 1 and maximum score of 14 points, in three moments: after the reading of didactic materials (sent to participants immediately after the period of enrollment at the Workshop); after a theoretical lesson expository dialog and after realistic simulation. The evaluation instrument of knowledge composed of questions of competitions and case studies built by Brazilian Group of Classification of Risk for

professional training in the use of the System of Sorting Manchester (SSM). For the use of these case studies, we sought the Consent of the Brazilian Group of Risk Classification. In order to verify the satisfaction and self-confidence of the students with the RS method, we used the Satisfaction Scale of Students and Self-Confidence in Learning created by the National League for Nursing (NLN), league dedicated to excellence in nursing education and validated for the Portuguese language[11]. This is a scale developed to measure satisfaction and confidence of individuals, acquired through the simulation of high fidelity. Composed by 13 Likert-type items of 5 points, divided in two dimensions (satisfaction/item 1 to 5 and confidence in learning/item 6 to 13)[11].

The students invited to participate in the event were those who were regularly enrolled in more advanced semesters of nursing course (7th and 9th, which correspond to 60 students) and medicine (4th and 5th, which corresponds to 47 students), at the time of data collection, 1st half of 2016. Students of Medicine have contact with the theme in the initial periods, whereas for the students of nursing, this contact is delayed. The event was very free and made available in electronic form. The participation of the subjects occurred during a period of 8 hours of live activities. The event was offered in three days and each subject chose the day of his participation. In all the days, there were offered the same content and used the same method of teaching. There were available 35 vacancies to participants per day of event, i.e., 105 vacancies throughout the event.

An amount of 53 subscribers attended the three days of the event. Two of these have not concluded their participation. The final sample consisted of 51 students, being 23 medicine, and 28 nursing. On the first day, participated 17 people, 19 in the second and third 15. At the time of registration, participants fulfilled, online, a form containing the Free and Informed Consent Form (ICF), formalizing the accepted to participate in the research.

Through this same form, data were collected regarding the following variables: gender, age, and course, period of the course, race, and information relating to previous experience with the realistic simulation.

Prior to the event, we sent to subscribers, via online, didactic materials with content related to the simulation and risk classification in urgency and emergency. Each day of the workshop, a professor from UFVJM, PhD in Nursing, gave a lecture on the STM and the use of realistic simulation as a teaching tool (4 hours). After this step, the students were sent to the five scenarios of simulated activity (4 hours). Of these, four used standardized patients, who were trained prior to the event and dramatized situations of clinical priority concerning the colors orange, yellow, green, and blue. The season for the red color used an average-fidelity simulator.

There was a random division of subjects into five groups, so that the composition was similar in number, as well as formed by students of medicine and nursing. All groups experienced five different simulated scenarios, which beheld the five clinical priority levels of the STM, with a color assigned to each one of them (red - emergency; orange - very urgent; yellow - urgent; green - little urgent and blue - non-urgent). The roles undertaken by students were sometimes the classifier risk, another observer of the scenario. All participated in these two activities.

A facilitator led each scenario by who soon after the closure conducted the debriefing. This was recorded and structured by three questions: 1) How did you feel since this patient? 2) What are the positive actions carried out? 3) What would you do differently in another opportunity?

Each facilitator had 30 minutes to lead the scenario and perform the debriefing. The teachers responsible for each scenario (maximum of 5 students) were facilitators of the discussion in the working group, the feelings experienced by the students who took a risk classification, the successes, and opportunities for improvement, as well as promoted the clinical reasoning, critical thinking, and ability to trial.

After this phase of the event, the participants were again gathered in the auditorium and replied to the third evaluation tool of knowledge and fulfilled the Satisfaction Scale of Students and Self-Confidence in Learning.

The collected data were tabulated and analyzed using the Statistical Package for Social Sciences (SPSS) version 23.0. Analyzes were carried out with descriptive statistics for earning average, standard deviation and absolute and relative frequency of data.

The normality of data was verified by the Kolmogorov-Smirnov test. The data did not follow a normal distribution. To check if there was difference between the scores obtained in the tests, the results were submitted to the Friedman

test, with post-Wilcoxon test. It was used the Mann-Whitnney test for comparison between the items of the Scale of Satisfaction of Students and Confidence in Learning. The association of categorical data has been verified by the Chi-square test. The level of significance was of 95% ($p < 0.05$).

The project was submitted to the Ethics in Research Committee of the Federal University of Vales do Jequitinhonha and Mucuri, approved under Nº 1,443.291, followed the recommendations of Resolution Nº 466/2012.

RESULTS AND DISCUSSION

Of the 51 participants in the study, 84.30% were females, average age of 23.25. The characterization of students per course (Nursing and Medicine), is described in Table 1.

Table 1 - Characterization of students per course (n = 51), Diamantina - MG, Brazil, 2016.

Variables	Nursing n (%)	Medicine n (%)	p-value
Gender			
Female	25 (89.3)	18 (78.3)	0.281
Male	3 (10.7)	5 (21.7)	
Semester			
4 or 5	-	23 (45.1)	<0.001
7 or 9	28 (54.9)	-	
	Average (SD)	Average (SD)	
Age	23.82 (2.93)	22.57 (4.29)	0.222

Source: Explanation of the authors.

The data are similar to those that were found in studies using the simulation. In one, the majorities were females (86.4%), average age of 22.38 and a sample of 59 students[12]; on the other, the prevalence was of the female gender and an average age of 22, with a sample of 55 students[13].

In the present study, 28 students were from the nursing course and 23 in the course of medicine, demonstrating that the simulation enables customer service to all areas, which corroborates the proposal of interdisciplinarity, offering the same opportunities and advantages for the courses. The interdisciplinary simulations are able to create the integrality as required in the treatment of the patient[14].

It considers that this study brings a different design to contemplate medical and nursing students in the scenario of the simulation, differing from other, in which participated only in nursing[8,12,13,15,16].

The analysis of the association of the existence of a prior experience of the subject with the simulation, the course, and the period that it is described in Table 2.

Table 2 - Association between prior experience with simulation, course and semester (N = 51), Diamantina-MG, Brazil, 2016.

Variables	yes N (%)	no N (%)	p-value
Course			
Nursing	6 (75.0)	22 (51.2)	0.197
Medicine	2 (25.0)	21 (48.8)	
Semester			
7 or 9	6 (75.0)	22 (51.2)	0.197
4 or 5	2 (25.0)	21 (48.8)	

Source: Explanation of the authors.

Only eight students reported previous experience with the simulation, six from nursing, and two from medicine. There was no significant association between prior experience and the semester in which the students are enrolled. The fact that the students of nursing (N=22) were in advanced semesters and all from medicine (N=21) in the initial semesters of the course did not interfere with the prior experience with the simulation. This result shows a need for greater exploitation of the UFVJM simulation labs.

The analysis of the average score of the tests occurred in three moments: after the reading of didactic materials (evaluation 1), after the theoretical class/traditional method (evaluation 2) and after the method of teaching

with realistic simulation (evaluation 3) there is described in Table 3. There was statistically significant difference between the scores obtained in the 3 tests (p<0.001), showing a growing average score among them.

Table 3 - Average score analysis of evidence in three moments (N = 51), Diamantina-MG, Brazil, 2016.

Variables	Average (SD)	p-value	Post-hoc test
Test 1	8.51 (2.42)		P1 x P2: <0.001
Test 2	10.18 (2.30)	<0.001	P1 x P3: <0.001
Test 3	11.10 (2.33)		P2 x P3: <0.001

Source: Explanation of the authors.

Simulation is a teaching strategy in expansion in the formation of future professionals with the aim to make them increasingly authorities, in order to meet the demands of the labor market[7]. In the area of health, it is regarded as an incipient strategy, but it has expanded significantly in the last decade, being developed by the prospect of patient safety and the individual himself inside totally controlled environment, where mistakes are part of learning[17]. It is possible to observe studies that used the simulation in which participants had no previous experience with this method of education[18].

Studies show an increasing number of researches that seek to measure the implications of simulation as a teaching strategy, mainly in order to understand the level of knowledge built from its use[17,19]. The teaching method with realistic simulation after expositive dialoged class proved effective, since the average score (11.10 points) obtained in the test after the simulation was greater than the average score (10.18 points) after the theoretical class; showing that the knowledge improved after the experience with the simulation, as shown in Table 3 (p<0.001)[17].

This result goes to meet other studies, which indicate that among the technologies used in the simulation has been shown as a teaching and learning strategy effectively, once that structures the knowledge of effective way[11,19].

In the present study, even the students belonging to different courses and being enrolled in the initial semesters or more advanced within their respective courses, all showed important developments in the construction of theoretical knowledge, after the theoretical class and realistic simulation. Such data are demonstrated by the results obtained by them to the evaluation tool of knowledge. It can be inferred that the method of teaching of realistic simulation is effective as to its proposal of interdisciplinarity, in terms of increased knowledge. It is suggested that other studies be carried out aiming to measure the ability, attitude, and relationship in the team.

A study carried out in the area of simulation demonstrates the occurrence of benefits in terms of acquiring knowledge in a group subject to simulation, which obtained an average of 90.34, in relation to the average of 87.67, obtained by the subjects submitted to the traditional method of education[20]. The simulation method proves to be a teaching strategy that stimulates the active participation and reflective of the student providing a learning environment[2]. At the time of the simulation, the student has the opportunity to assimilate all the knowledge in a clinical situation and assume a posture of training[2].

It is worth noting that, for the learner to participate in a realistic simulation, it is necessary that he have the knowledge and skill to experience the simulation. To achieve his objectives, it is essential that occurs the integration between theory and practice.

The results of this study show the importance of the integration of strategies for teaching. It is perceived that students have evolved after the use of each one of them (p<0.01), the average score was growing with each step.

The simulation can provide a safe environment while recreates stressful situations that require quick thinking and appropriate interventions[8]. During the debriefing students reported pleasure to participate in simulations, describing them as a real experience, which can justify the fact have also stated feelings such as fear of the patient worsen, unsafety in the standings, need to be more responsive, among others.

The debriefing allows the revision of a simulated experience in which participants explore, analyze their processes of action and thought, emotional state and other information that can enhance their performance in real situations[21].

The result of the analysis of the association between the answers of the Students Satisfaction and Confidence in Learning and the Course (Nursing and Medicine) are described in Table 4, showing the average and standard deviation for each course. There was no significant difference in the responses those the pupils of the course of nursing and medicine attributed to the scale (p > 0.05).

Table 4 - Analysis of the association between the range of Students Satisfaction and Confidence in Learning and the Course (Nursing and Medicine) (N = 51), Diamantina-MG, Brazil, 2016.

Variables	Nursing	Medicine	
	Average (SD)	Average (SD)	p-value
Satisfaction with learning	23.57 (1.75)	22.69 (2.58)	0.211
Self-confidence in learning	34.10 (3.52)	33.04 (2.63)	0.326
Full scale	57.67 (4.73)	55.73 (4.47)	0.190

Source: Explanation of the authors.

The recognition of possible satisfaction and dissatisfaction of the students can contribute to the establishment of strategies that aim to qualify the students learning[22]. This research shows the result of students' satisfaction with the learning, as well as self-confidence, with reference to the method of teaching: realistic simulation. This result is presented in table 4, which presents answers attributed to two dimensions of Student Satisfaction and Confidence in Learning, demonstrating that there was no statistically significant difference in responses by the students of the course of nursing and medicine (p = 0.190). This result may be related to realism experienced during the simulation, which makes it interesting this new teaching method.

Another inference that can be made from the results of table 4 is that students were more satisfied than self-reliant with learning who received during the simulation activity. That, considering the scores of students of nursing 23.57 and medicine 22.69 points for the dimension "satisfaction of the students" in a ranking from 0 to score 25 points. Moreover, to the extent "self-confidence in learning", a ranking of 0 to score 40 points, nursing students scored at 34.10 and medicine 33.04 points.

According to some authors, the satisfaction expressed by students with laboratory practice results from the relation of the realism of the scenarios with the theory presented in the classroom, simulators used quality and interactivity with these[23]. The satisfaction is directly related to student achievement, affecting in their vocational training, as well as in their social interactions[22].

The dimension "self-confidence in learning" consists of a self-evaluation conducted by students. This item was found a score above 80% representative both by Nursing students (85.25%) and by the students of Medicine (83.50%), showing the importance of simulation in learning about self-confidence.

Other searches have also shown the importance of self-confidence in learning, such as: after school of realistic simulation, the self-confidence of students to intervene in an emergency increased[13]; simulated practice is a strategy that can increase self-confidence to intervene in a situation of urgency[16].

Self-confidence is considered an indicator of proactivity to intervene in situations of urgency, when every second counts. The health professional must feel confident that he is able to act appropriately, otherwise it may experience delays in aid, increased levels of anxiety and greater number of errors[16].

Table 5 presents a positive correlation (p<0.001) between the satisfaction and confidence of the Nursing and Medical students with learning, using the simulation.

Table 5 - Analysis of correlation between satisfaction and self-confidence of students of Nursing and Medicine with learning using the simulation (N = 51), Diamantina-MG, Brazil, 2016.

Variables	Satisfaction with current learning		Self-confidence in learning	
	r_s	p	r_s	p
Satisfaction	-		0.587	<0.001
Self-confidence	0.587	<0.001	-	

Source: Explanation of the authors.

It is noticed that increased satisfaction is associated with increased confidence, confirming the importance of the relationship of student satisfaction with the teaching method used.

This study had as limitation its achievement in specific population of students possessing, in total, an amount of 89 students. This was due to some peculiarities of the courses as nursing annual input and medicine is a course booked. It is suggested that future studies comparing two distinct groups (with and without intervention) to infer about the student achievement with the realistic simulation.

CONCLUSION

The use of different methods of teaching contributes to greater knowledge construction. Notice that the association of the traditional method with the method using realistic simulation shows to be effective for obtaining it and, consequently, it improves the knowledge and may state that the set of methods has encouraged the development of theoretical knowledge.

It can be said that the use of different methods of teaching provided improvement in evaluation of knowledge (p<0.05) and allowed the students to feel self-confident and happy with learning. The simulated reinforced learning to allow students experienced that simulated real life, contributing to an academic training that includes patient safety.

It is suggested that further research be conducted with other audience, for example, health professionals in exercise, contemplating the permanent education in service. The simulated scenarios could be made during the shifts in which professionals attended, aiming to enable the same, greater knowledge on the subject, as well as standardize the conducts.

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