Realist simulation as instrument for teaching-learning process in nursing

Simulação realística como instrumento no processo de ensino-aprendizagem de enfermagem

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RESUMO

Objetivo: identificar na perspectiva do corpo docente a importância da Simulação Realística na formação do profissional do Enfermeiro. **Método:** Estudo descritivo, quanti-qualitativo, desenvolvido com docentes que utilizam o Laboratório de Habilidades, do curso de enfermagem de uma Universidade do Centro Oeste. **Resultados:** Participaram do estudo seis docentes enfermeiras, que atuam há menos de dez anos na instituição, com titulação em nível de mestrado, com predominância de regime de trabalho horista. A minoria possui participação em pesquisa ou pós-graduação, nenhuma está envolvida com atividade de extensão e apenas metade já participaram de discussões sobre o Projeto Pedagógico do Curso. Todas possuem experiência em atividades assistenciais. Quanto a simulação realística a maioria diz conhecer essa abordagem de ensino, e metade possui experiência, porém apenas 33% a utiliza constantemente em suas aulas. A maioria afirma que o laboratório de habilidades não é adequado para essa modalidade de ensino e que a instituição não investe o suficiente para o desenvolvimento dessas aulas. **Conclusão:** Quanto as vantagens relacionadas ao ensino baseado em Simulação Realística destacaram-se a relação entre a teoria e a prática, o desenvolvimento de raciocínio clínico em casos complexos e individualizados e como desvantagem falta de capacitação do professor aliada a falta de condições de trabalho.
Descritores: Simulação; Enfermagem; Docentes de Enfermagem; Educação em Enfermagem; Escolas de Enfermagem.

ABSTRACT

Objective: to identify in the perspective of the teaching staff the importance of Realistic Simulation in the training of the Nurse Practitioner. **Method:** Descriptive study, quantitative and qualitative, developed with teachers who use the Skills Laboratory, of the nursing course of a University of the Central West were investigated. **Results:** Six nursing professors participated in the study, who have been working for less than ten years in the institution, with a master's level degree, predominantly working hours. The minority has research or postgraduate participation, and none is involved in extension activities and only half have participated in discussions about the Pedagogical Project of the Course. All have experience in welfare activities. As for the realistic simulation, the majority says they know this approach to teaching, and half have experience, but only 33% use it constantly in their classes. Most say that the skills laboratory is not suitable for this type of teaching and that the institution does not invest enough in the development of these classes. **Conclusion:** The advantages related to teaching based on Realistic Simulation were highlighted the relationship between theory and practice, the development of clinical reasoning in complex and individualized cases, and as a disadvantage a lack of teacher training and the lack of working conditions.
Descriptors: Simulation; Nursing; Nursing Teachers; Nursing Education; Nursing Schools.

ORIGINAL

Introduction

Nursing education has undergone a series of changes, inclusions and new perspectives in relation to teaching-learning. Until then, the knowledge was fragmented in specialties and the learning based on passive techniques as, for example, theoretical classes, expository and written tests. They decrease the retention of knowledge and the applicability in the university practice.[1-2]

Realistic simulation (SR) is part of a new teaching possibility that encompasses not only technical skills, but crisis management, leadership, teamwork, clinical reasoning in critical situations or that can cause harm to the real patient. Nowadays, the term simulation is used in several possibilities of teaching learning to the health professionals, in this way SR is a strategy that allows to the academic of the area of the health abilities that will be used, later, in the work process, since the formation must leave of a presupposition that the training of human resources must be interconnected with the modes of health care in order to create environments conducive to the teaching and organization of the process of care based on evidence, thus remodeling the curricular matrices in order to form differentiated professionals directly guiding the triad also based on research and extension.[2-4]

In this sense, there is a latent need for the reformulation of teaching including the inclusion of technological resources for undergraduate nursing education. In this way, SR is considered as an alternative once that simulators are tools that facilitate teaching.[5]

The use of simulation arose from military training and flight simulators, which led to higher quality and error minimization. In nursing, the teaching of technical skills was always based on simulation, but this process occurred without interaction between response and interactivity.[6-7]

The use of mannequins in the world dates earlier 1910, becoming popular in 1950 with the medium and high fidelity simulators emergence. In Brazil, the use of simulators began to be used in 1920 at the Ana Nery School of Nursing in Rio de Janeiro - RJ. This institution already used in its learning environment laboratory rooms that contributed to the development of the care process.[8-9]

Simulation-based teaching brings a new age to the teaching process, especially since the 80's, when new generations of simulators emerged, strengthening over the last forty years.[10-11]

Simulation is defined as a protected space where health practice scenarios are created, coupled with a set of techniques that recreate workspaces, replacing or amplifying actual or guided experiences. These procedures are practiced on mannequins and puppets having the teacher as facilitator and evaluator, can be accomplished through the application of computational models having the educational environment as the main place for pratices.[8,11-12]

Clinical simulation is a method that aims to improve reasoning and critical thinking, which qualifies the evaluation skills and decisions required in healthcare practices.[13] In this way, the simulator can be defined as an object or as a partial or integral representation of a task that is replicated, they are used as instruments that evolve and attract students. It is capable of providing information that imitate reality and can be used throughout the curriculum and/or in isolated disciplines.[3]

These simulators are classified as low, moderate and high fidelity according to the ability to reproduce sounds and images. The low-fidelity simulators are static, with less reproduction of reality; those of moderate fidelity have a greater realistic capacity and offer auscultation of respiratory and cardiac sounds, leading to the identification of different diagnoses. High fidelity are extremely realistic with thoracic movement, photo reactive eyes, pulmonary, cardiac, intestinal and vocal sounds presenting with bleeding and secretions depending on the procedures performed for teachers.[14]

The use of simulation techniques favors the application of the National Curricular Guidelines for the Nursing course since the expected egress profile requires professionals with a generalist and humanistic, critical and reflexive education, capable of learning to learn and who are committed to the education and training of future generations of professionals.[15-18]

The simulation corroborates with the recommendations of the best practices of Nursing and the current recommendations of the Quality Committee in Health Care of America, which provide on the prevention of errors and patient safety assuming that the learning of the team is accomplished through the use of simulation based on the management of the team in emergency situation and stimulation to the interdisciplinarity adjusting to the international parameters of education, where the training of professionals must meet the demands of globalization.[6-7]

This type of teaching must be linked to an adequate planning based on four elements so that the evaluation process can occur in an integral way, as follows: the simulation script; personal development and student orientation; the execution of the simulation and finally the simulation assessment. Additional phases involve the knowledge of reality, determination of objectives, organization, selection of resources, structuring of teaching plans, and assessment. This last step is being done to consider all the context covered during the problem solving, instead of using only the evaluation of the final results.[3]

Using simulation as a teaching method is challenging, since it must be included in the Pedagogical Project of the Course (PPC) of Higher Education Institutions, becoming a national reality, based on strategies that discuss training, through investment in training of permanent assessment commissions and, above all, the permanent training of teachers and the insertion of students in research aiming to strength the use of simulation for teaching process. [19-22]

Its use does not replace the teachers profession, once they are mediators and providers of the learning process. The digital technologies only provide support and the tutor is the author responsible for the link between the search for knowledge and academic performance.[19,4] In this sense, the teaching staff should have the necessary profile to act with this teaching strategy, with experience in the assistance, associated with an openness to new learning methodologies.[4,20]

Their pedagogical practice should go beyond traditional didactic teaching. From this perspective the curriculum should be conceived through multidisciplinarity and centered on the student body, carried out, especially in laboratories of skills that can be designed with high quality standard.[6]

Its recommendation is supported by the improvement of semiology teaching, because from its resources is that the student has the condition to

learn to differentiate normal and adventitious findings, identifying also physiological responses, as well as skills to obtain data through physical examination and its interpretation, since this knowledge confers to the nurse facilities for the development of the nursing process.[19]

The benefits derived from simulation-based teaching are many, as they provide teachers the opportunity to assess and measure the student's ability to integrate. Also, it allows the chance to err and thus lead to professional growth without compromising patient safety, since knowledge acquired through the use of programmed situations, which represent the professional reality, also allowing control of external factors, standardization and systematization of teaching, as well as positive feedback to students.[6]

From then on, it gives the student the ability to deal with a sense of insecurity, fear, uncertainty and motivation to question the procedures performed, leading to the construction of experiences that require reflection and allows the possibility of acquiring self-directed capacity of the formative process.[21] Students will receive an evaluation of their actions in addition to considerations that will allow them to change their behavior, contributing to the teacher's ability to evaluate the progress and effectiveness of theoretical classes and to qualify nursing undergraduate teaching in its theoretical and methodological bases.[22]

Currently, there is resistance to simulation-based education, since many institutions are still inflexible to changes, with little reflection on teaching, allied to distancing from health services, reinforced by the dichotomy between thinking and practicing.[22]

Knowing and using the skills laboratory of a Community Higher Education Institution of the State of Goias, the objective of the study was to analyze the use of Realistic Simulation in the training of the Nurse Practitioner in teachers' perspective.

The study is justified by the inherent need to evaluate new teaching methods allowing the rearrangement of the nursing courses' PPC aiming the excellence in formation of the Brazilian nursing professionals.

Method

This is a descriptive, quantitative-qualitative research that was developed with the teaching staff that teaches in the Skills Laboratory of the Undergraduate Nursing Course of a University of the Central West region of Brazil.

Data collection was performed in April 2016 by means of two questionnaires that assessed: 1- the profile of the teaching staff evaluating variables such as: Age, gender, academic training, training area and Lato and Stricto Sensu Specialization, If they are active in the discussions and academic claims, working time in HEI, professional experience in the related area, if they know the SR Strategy, if they have experience in SR, the frequency of use of the the reason for adherence or not to the methodology that has elapsed, if the place conducive to development and if it is believed that SR is fundamental for the critical and reflective development of the student. 2- Checklist of simulators, who did the survey and evaluated the technology degree of the simulators of the skills laboratory, ranking them between low, medium and high fidelity.

The study population was composed of six nursing professors from the referred institution. Included in the study were All teachers of the Nursing Course, who use the Skills Laboratory and excluded the Teachers, who were on leave for private or health interest in the period of data collection and those who did not respond to the questionnaire after 3 (three) attempts.

The data were organized into an Excel 2012 spreadsheet for analysis and later using the descriptive form and performed both univariate and multivariate analyzes in qualitative form.

The present study was approved by the Ethics and Research Committee under the protocol CEP 1782/2012. The guidelines and regulatory norms of research, involving humans, of No. 196/96 of the National Health Council. All ethical principles and postulates were obeyed, according to CNS Resolution 466/2012 and its supplements. The data were collected after consent where the participant was invited to participate in the research as a volunteer, identifying the project objectives, discomforts risks and benefits, study confidentiality, and pertinent information from the course research through his signature of the Term of Free and Informed Consent (TCLE).

Results

In all, six teachers were identified that met the criteria proposed in this study. In this context, among the six professors four have a latin sense formation in higher education teaching or correlative training course.

Through an instrument it was identified that the skills laboratory has in its equipment, simulators of high, low and medium fidelity, being in greater quantity those of low fidelity.

The Skills Laboratory is composed of 10 air-conditioned rooms with a maximum capacity of 15 students per room that simulate scenarios of clinical infirmary, surgical ward, maternal infirmary, intensive care unit, 2 consulting rooms (mirror rooms), nursing station , 2 semiological training rooms, a classroom and a reception with fifty individual bins.

It has furniture made up of stretchers, benches, cabinets, whiteboards and negatoscopes. It has two high-tech simulators for cardiovascular, respiratory and abdominal training. It can analyze specific reactions to medications, speech, glottal edema, arrhythmia, nuchal rigidity and trismus.

It has low technology models for training procedures for bladder catheterization, nasogastric probe, vaginal touch, breast palpation, obstetric touch, paracentesis, orotracheal intubation, cardiopulmonary resuscitation (adults and pediatric), as well as various materials such as individual protection instruments and equipment , tubes, catheters, probes, needles, stethoscopes, sphygmomanometers, speculums, magnifying glasses, flashlights and scales.

It was observed that all the teachers are female and that age varies from 35 to 61 years, being the majority nurses (4/6), all have Latu Senso formation and (4/6) have more than one specialty, and yet all of them have Stricto Sensu training, with a Masters Degree degree, with emphasis in the areas of Education and Health Sciences.

The majority (4/6) works in the Institution researched for less than 10 years, has an effective position with predominance of workload of 20 hours,

with hourly work regime.

Among the activities carried out by the teachers within the Institution of Higher Education, 100% are involved in teaching activities at the undergraduate level and 17% have participation in latu sensu research or graduate studies, and 100% are not involved in extension activities, none of the participants made or are part of the Structuring Faculty, but 50% have already participated in discussions about the Pedagogical Project of the Course.

As for the activities developed in the area of care, 80% said they did not work at the moment in this modality, but all of them already exercised care activities at some point in their professional career, as for the experience time 50% have experience time less than 10 years while the other 50% have more than 10 years of experience, predominantly in the area of Surgical Nursing, Intensive Care Unit (ICU) and Nursing Fundamentals, and less experience in Nursing Medical Clinic and Obstetrics, other areas cited as professional experience were Orthopedics, Public Health, Infection Control, among the reasons cited for not currently working with care, some reasons are related to the lack of new job opportunities, and full involvement with teaching activities that require time and preparation.

Regarding SR Strategy, the vast majority of 83% say they know this teaching approach, of which 50% have SR experience, 33% say they always use it when teaching their classes.

They believe that classes with a Realistic Simulation teaching approach give the student clinical reasoning (67%), and believe that the student has an interest in teaching based on realistic simulation. They also affirm that the skills laboratory is not suitable for SR teaching and that the IES does not invest enough in the development of these classes.

When asked why they do not use the Realistic Simulation in their classes, teachers described the need for a previous theoretical class as a necessary requirement for the student to have knowledge before having a class based on SR, lack of improvement of the own teacher.

The following benefits were mentioned: the relationship between theory and practice, the development of clinical reasoning in complex and individualized cases, and the favoring of decision in the field of practice together with the training of the student, preparing him for unusual situations, the effectiveness of the teaching learning process, the ease of communication of the student, a previous experience of this that acquires coordination of movements translated in resourcefulness and precision, when handling the material and familiarize themselves with the execution processes, because according to the teachers the strategy also allows the student to be inserted into concrete situations of the reality that will be solved by them in the scenario of the practice making possible to make the skills in an environment that allows errors without risking the security of the patient, minimizes the impact with reality.

Regarding the disadvantages to SR-based teaching, the answers found were the teacher's lack of ability, allied to the difficulty of the teacher in creating real situations for the development of teaching practice, associated with a lack of knowledge of new teaching and assistance technologies, besides constant need for updating, impaired by the lack of time related to collections on theoretical issues and lack of time for dedication to research.

Other disadvantages are related to lessons based on the imaginary, having difficulty transmitting some situations, the impact of the student when performing any activity when in contact with the hospital environment or any other activity, associated with the theoretical unpreparedness of the student who was cited by two teachers

The teacher's lack of training, including the handling of the equipment and the lack of interest in the equipment, was also cited as a disadvantage that would be related to working conditions (number of students versus excessive teaching activities, lack of materials - cited by two teachers).

Discussion

The National Curricular Guidelines for the Nursing course deal with the importance of forming a nurse with decision-making competence, based on a practical knowledge capable of evaluating behaviors more appropriate to their reality.[15]

In this sense, the Federal Nursing Council (COFEN) establishes that any activity developed by the student is the responsibility of the training institution, regardless of the level of technical or higher education through specific laboratories, so that the student develops activities compatible with the exercise of professions and also establishes that the practical classes should be the responsibility of the Teaching Nurse.[23]

Thus, in the proposed study it was evidenced that the majority of the teachers were nurses with Stricto Sensu training, with a higher level of Master's degree, being considered an important factor, since the quality of higher education is related to the degree of the teaching staff, currently, one of the variables evaluated by the National System of Evaluation of Higher Education.[24]

However, this quality can be reduced when it is noticed that most of the researched teachers are working in the hourly work regime and even though they did not participate until the moment of discussions of the pedagogical project of the course.

In this sense the teacher who is regarded as the sustainer and mediator of the process teaching learning and innovation should be active in the participation of discussion on the pedagogical project of the course built collectively focused on the formation of the student body to train a professional with competence for decision making, that is impossible when the work regime is hourly.[18,25]

Participants had an incipient involvement with the research and extension, leading to the weakening of the quality of higher education, since it is necessary the existence of the teacher's involvement in research activities to develop and update their work.[4,25]

Professional experience in hospital nursing care is another factor to consider when talking about quality of higher education. It was observed that all teachers have this experience, but not all currently have it. In this way, teaching must be linked to the experience and performance of the professional in the assistance, since this separation separates theory from practice, preventing it from describing reality, reducing the confidence of the teacher himself, making him believe to be just an idealist far from the hospital

reality.[1,24]

As for SR-based teaching, teachers report that they use it in their classes, but only a small part makes constant use of it. However, the quality in the health area formation occurs when teaching in realistic simulation is performed before the student goes to clinical activity.[26]

Since the teaching based on the SR strategy, promotes to the educators of the nursing area the opportunity to quantify the integration of the student before the various professional modalities.[11]

It is through the theoretical and practical training that occurs the updating of knowledge mainly in relation to the practical context that must be based on scientific evidence breaking with the archaic model of teaching focused on the unique experience of patients, which generates lack of uniformity of the learning process because it allows vacancies due to lack of opportunity and experience in academic training.[4,26.]

Since with the constant innovations in the area of health the nurse may come across procedures that she had not yet had the opportunity to experience during her training or field of work, generating the probability of error when the situation is first performed.[26] In this way, the simulation allows the student to experience, in real time, frequent situations in the practice of care, thus occurring to the consolidation of knowledge in a safe way that strengthens the theories seized in the classroom environment, allowing the interaction of students in the identification and recognition of signs and symptoms that have already been learned, but which are latent, especially when in an unexpected situation.[27]

In this way it is necessary that there is investment in the Skills Laboratory since it is the environment to which the SR strategy can be used, it is necessary for the student to have the opportunity to acquire skills, where the constraint of this reality is minimized, contributing to the patient safety.[10]

However, when questioning about the institution's investment in SR-based training, the vast majority of teachers were categorical in saying that the university does not invest enough in simulation-based teaching and that the institution's skills laboratory is not suitable for simulation teaching.

During the survey of simulators that make up the institution's skills laboratory, it was noticed that the great majority are of low fidelity, and only two models are of medium and high fidelity, already archaic in relation to the one that exists of launch in the market.

The laboratory is expected to be well-equipped, serving a variety of activities developed throughout the course, allowing students to undertake both scheduled and free-time training so that they have the opportunity to achieve adequate levels of knowledge before going to the field in practice, which is only possible when there are both financial investments and in the improvement of the offered education, being important the existence of a program of maintenance of the infrastructure of these environments.[10]

Since institutions that wish to be centers of excellence with respect to the quality of teaching offered to their students should be concerned about whether their students will be trained with a high technical-scientific performance. Emphasizing that this is done through investment in simulated practical teaching.[26]

In this way, a school that intends to be an up-to-date and forward-

looking innovator should take advantage of the potential of current technologies to foster the development of skills in its students.[26]

This fact corroborates the view of the researched professionals who believe that the realistic simulation gives the student clinical reasoning, together with the interest of the students in classes based on the SR strategy. Since the SR strategy allows the promotion and objective evaluation of student performance, which no longer has a passive attitude towards learning, generating self-confidence.[28]

Allowing the incorporation of innumerable benefits because its inclusion in the educational formation develops in students, attributes related to the cognitive, affective, psychomotor and attitudinal field, besides providing greater security for action in the field of work.[27]

In the same way, teachers' thinking corroborates in an inherent way because they enumerate several advantages when using SR, such as: the development of communication; coordination of movements; the development of clinical reasoning and the minimization of impact with reality.

However, it is worth noting that disadvantages were also cited regarding the use of the methodology, such as the impact of the student when he / she performs any activity related to hospital contact.

This difficulty can be related to lack of knowledge, which leads to lack of attitude towards a clinical situation concomitant with anxiety, limiting the student's performance during SR.[27]

However, the development of competences in practice and the identity of the professional future is only achieved when the student has an impact with reality at the beginning of the training, which is a complex and endless process that goes through different phases.[29]

One of the teachers stated the lack of training linked to working conditions reflected by excessive activities, as a disadvantage to SR-based teaching. This can be solved through the establishment of ongoing training programs from the perspective of action-reflection-action collectively built through experiential knowledge, the teacher's life cycle.[4,30]

Finally, little is known about studies related to the profile of the nursing faculty for teaching in the use of SR strategy, but the study evidenced the importance of the use of new techniques as a way to provide the formation of an egress with the profile of making decisions based on practical experience.

Conclusion

Teaching based on the SR strategy is important for the training of a nurse with decision-making competence, for it is necessary that the faculty that will form this egress is trained, and it is necessary that the teacher receives adequate incentives for the search for a professionalization that allows this to offer a quality education.

In this sense, the institution to which it is part is the key point to acquire this knowledge, because there is no way to contain a qualified teaching professional when the latter is under a work schedule, since this regime does not allow the development of research activities and extension, much less the construction of a PPC that is the primary basis for achieving the quality of teaching.

The university must seek to be a place of teaching excellence and even in its practical classes, and SR strategy enables the same quality of education that will shape the future professional reflecting in a workforce linked to the quality and safety of the patient.

However, there must be efforts to reach a common denominator. In this perspective, it is not possible to say that it is only to implement the realistic simulation strategy that will give quality teaching, but to create appropriate and courageous solutions, such as avoiding the hourly labor regime, and at the same time create ways to provide the teacher with investment in his or her professional field, which is mainly possible through research.

Therefore, it is necessary to invest constantly in the training of this teacher, in courses that provide him with the renewal of simulation concepts, considering that it is a relatively new strategy and that needs constant updating, so a team must be formed that is responsible by monitoring the practical classes.

Further studies are needed that address the teaching theme in SR teaching, to assist in the training of future nursing teaching professionals, based on the highest technology and innovation, in order to guarantee quality of egress, at the same time patient safety and professional excellence.

References

1. Barreto DG, Silva KGN, Moreira SSC, Silva TS, Magno MCS. Simulação realística como estratégia Ferreira RP, Guedes HM, Oliveira DWD, et al. Revista de Enfermagem do Centro-Oeste Mineiro 2018; 8/2508 de ensino para o curso de graduação em enfermagem: Revisão integrativa. Rev. baiana enferm. 2014 maio/ago 28(2):208-14. Disponível em: https://portalseer.ufba.br/index.php/enfermage m/article/viewFile/ 8476/8874

2. Brandão FS, Collares CF, Marin HF. A simulação realística como ferramenta educacional para estudantes de medicina. Sci Med [Internet]. 2014 [citado 2015 abr. 22];24(2) Disponivel em: Disponivel em: http://revistaseletronicas.pucrs.br/ojs/index.php/scientiamedica/article/ viewFile/16189/11485

3. Stahnke F, Lima A, Barros PRM, Bez M. Aprendizagem baseada em projetos: o caso health simulator. trc [Internet]. 30dic.2015 [citado 20abr.2019];15(2):39-8. Available from: https://revistas-tecnologicocomfenalco.info/index.php/teknos/article/view/491

4. Moraes-Filho IM, Carvalho-Filha FSS, Almeida RJ, Guilherme IS. O currículo no ensino superior: adequações necessárias para o despertar dos egressos. Rev. Cient. Sena Aires. 2017; 6(1):1-2.

5. Ferreira C, Carvalho JM, Carvalho FL de Q. Impacto da metodologia de simulação realística, enquanto tecnologia aplicada à educação nos cursos de saúde. In: Seminário de Tecnologias Aplicadas a Educação e Saúde, 2, 2015 Out 26-27; Salvador (BA). Salvador: UNEB; 2015. p.32-40.

6. Sanino GEC. O uso da simulação em enfermagem no Curso Técnico de Enfermagem. J Health Inform. 2012;4(n.esp):148-51.

7. Silva GRF. Laboratório de simulação de práticas clínicas: Avanços na formação de recursos humanos na Enfermagem do Piauí. Revista de Enfermagem UFPI. 2012; 1 (3):155-7.
8. Gaba DM. The future vision of simulation in health care. Qual Saf Health Care 2004;13 (Suppl 1):i2-10.
9. Vieira RQ, Caverni LMR. Manequim de simulação humana no laboratório de enfermagem: uma revisão de literatura. Hist Enferm Rev Eletrônica. 2011;105-20. [Citado em 2012 jan. 25]. Disponível em: http://www.abennacional.org.br/centrodememoria/here/n3vol1artigo7.pdf
10. Troncon LE, Maffei CM. A incorporação de recursos de simulação no curso de graduação em medicina da faculdade de medicina de ribeirão preto - USP. RMRP [Internet]. 30jun.2007 [citado 20abr.2019];40(2):153-61. Available from: https://www.revistas.usp.br/rmrp/article/view/311
11. Santos MC, Leite MCL. A avaliação da aprendizagem na prática da simulação em enfermagem como feedback de ensino. Rev Gaucha Enferm. 2010;31(3):552- 6.
12. J. Bass, "Revolutionizing Engineering Science through Simulation". Simulation-Based Engineering Science, Virginia: National Science Foundation. Pp. 66.
13. Overstreet M. The use of simulation technology in the education of nursing students. Nurs Clin North Am [Internet]. 2008 Dec [updated 2015 Mar 18; cited 2014 Apr 07];43(4):593-603. Available from: http://www.ncbi.nlm.nih.gov/pubmed/18940416 DOI: 10.1016/j.cnur.2008.06.009
14. Seropian MA1, Brown K, Gavilanes JS, Driggers B. Simulation: not just a manikin. J. Nurs. Educ.2004 ;43(4):164-9.
15. Brasil. Diretrizes Curriculares Nacionais do Curso de Graduação em Enfermagem. Resolução CNE/CES nº 3, de 7 de novembro de 2001
16. Moraes-Filho IM, Carvalho-Filha FSS, Viana LMM. O que é ser enfermeiro? Rev Inic Cient Ext. 2019;2(2):1-2
17. Santos TN, Moraes-Filho IM, Silva RM, Félis KC, Pereira TC, Arantes AA, Souza ACS. Competências e habilidades para prevenção e controle de infecções identificadas no projeto pedagógico de um curso de graduação em enfermagem. Braz. J. Hea. Rev.2019; 2(2):701-17.
18. Arantes AA, Santos-Neto EC, Camargo LGA, Moraes-Filho IM, Santos OP, Caetano SRS. A relevância do docente na formação do enfermeiro. Rev Inic Cient Ext. 2018; 1(Esp): 193-201.
19. Dal Sasso, GTM, Souza, MdL. A simulação assistida por computador: a convergência no processo de educar-cuidar da enfermagem. Texto & Contexto Enfermagem [Internet]. 2006;15(2):231-239.Recupera do de: https://www.redalyc.org/articulo.oa?id=71415206
20. Gomez MV, Vieira JE, Scalabrini Neto A. The background of professors in health fields that use simulation as a teaching strategy. Rev Bras Educ Med [Internet]. 2011[cited 2016 Aug 07];35(2):157-62. Available from http://www.scielo.br/pdf/rbem/v35n2/03.pdf
21. Peteani LA. Enhancing clinical practice and education with high-fidelity human patient simulators. Nurse Educ. 2004 Jan-Fev;29(1):25-30

22. Teixeira Carla Regina de Souza, Kusumota Luciana, Braga Fernanda Titareli Merizio Martins, Gaioso Vanessa Pirani, Santos Cláudia Benedita dos, Silva Vivian Libório de Sousa e et al . El uso de simulador en la enseñanza de evaluación clínica en enfermería. Texto contexto - enferm. [Internet]. 2011 [cited 2019 Apr 20] ; 20(spe): 187-193. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-07072011000500024&lng=en. http://dx.doi.org/10.1590/S0104-07072011000500024.
23. Leadebal O, Fontes W, Silva C. Ensino do processo de enfermagem: planejamento e inserção em matrizes curriculares. REEUSP [Internet]. 1mar.2010 [citado 20abr.2019];44(1):190-8. Available from: https://www.revistas.usp.br/reeusp/article/view/40526
24. BRASIL Ministério da Educação. Instrumento de Avaliação de Cursos de Graduação presencial e a distância. Brasília: MEC, 2011.
25. Araújo BLS, Gomes DV, Pires VS, Moraes Filho IM, Costa ALS. Estresse Ocupacional em Docentes de uma Instituição de Ensino Superior da região metropolitana de Goiânia. REVISA. 2015; 4(2): 96-104.
26. Martins José Carlos Amado, Mazzo Alessandra, Baptista Rui Carlos Negrão, Coutinho Verónica Rita Dias, Godoy Simone de, Mendes Isabel Amélia Costa et al . A experiência clínica simulada no ensino de enfermagem: retrospectiva histórica. Acta paul. enferm. [Internet]. 2012 [cited 2019 Apr 20] ; 25(4): 619-625. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-21002012000400022&lng=en. http://dx.doi.org/10.1590/S0103-21002012000400022.
27. Magro MCS, Barreto DG, Silva KGN, Moreira SCR, Silva TS, Santos CE. Vivência prática de simulação realística no cuidado ao paciente crítico: Relato de experiência. Rev Baiana Enferm. 2012 maio/ago;26(2):556-61. DOI: 10.18471/rbe.v26i2.6544
28. Baptista Rui Carlos Negrão, Martins José Carlos Amado, Pereira Maria Fátima Carneiro Ribeiro, Mazzo Alessandra. High-Fidelity Simulation in the Nursing Degree: gains perceived by students. Rev. Enf. Ref. [Internet]. 2014 Mar [citado 2019 Abr 21] ; serIV(1): 135-144. Disponível em: http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S0874-02832014000100015&lng=pt. http://dx.doi.org/10.12707/RIII13169.
29. Simões JFFL, Garrido AFS. Finalidade das estratégias de su-pervisão utilizadas em ensaio clínico em enfermagem. Texto Contexto Enferm. 2007;16(4):599-308.Correspondência: edvane b. L. de domenicoRua Napoleão de Barros, 754 - Vila Clementino CeP 04024-002 - São Paulo, SP, brasil
30. Costa LDS, Pessoni LML, Moraes-Filho IM, Santos CCT, Queiroz HA, Araujo LM. Importância e necessidade de formas de organização e gestão escolar. 2018; 7(3): 214-27.

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