Analysis of realistic simulation as an educational tool in the academic and professional contexts of nursing

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Abstract

Nursing education and training based on content and technicality has undergone a process over the years mainly with the proposal of national curriculum guidelines to implement changes in the curriculum and the insertion of new teaching methodologies by educational institutions. Thus, realistic simulation is born with the proposal to actively teach students and promote the development of numerous skills and competences. ***Objective:*** *to analyze evidence of the use and effectiveness of realistic simulation as an active method of teaching and learning in nursing in the academic and professional context.* ***Methodology:*** *Integrative review, carried out on the databases: Cochrane, ERIC, Medline, Science Direct and PubMed. The descriptors were selected based on the list of Health Sciences Descriptors - DeCS / MeSH were: Nursing, Active learning, simulation training, matching the search terms, using the Boolean operator AND.* ***Results:*** *The final sample resulted in 37 articles. It was possible to observe that the simulation helps in critical thinking, reasoning, clinical judgment, leadership, autonomy and decision-making favoring patient care and that it can be performed in different formats, such as virtual simulation, clinical case simulators, simulation with games and room simulation with simulated scenario. The introduction of this methodology in educational institutions ended up being a limitation found, in addition to the need for technologies and training for teachers.* ***Conclusion:*** *From the results of this study, it is concluded that realistic simulation is a method capable of preparing students and professionals to meet health needs.*

Keywords: Nursing; Active Learning; Simulation training.

1. Introduction

Historically the training of health professionals has been based on traditional teaching methods with a foundation based on technicality and content. Under this perspective, the teaching-learning process for years was limited to the vertical transmission of knowledge and the fragmentation of knowledge, since the teacher assumes the role of transmitting knowledge and the student plays the role of retainer of knowledge. Thus, the student becomes limited to knowledge without developing self-confidence, curiosity and autonomy (Colares; Oliveira, 2018; Costa et al., 2020).

In this sense, higher education institutions (HEI) have been motivated to reflect and implement changes in their curriculum, so that innovative alternatives are adopted for the education and training of health professionals. Thus, the national and international scenario has also been modified over the years, implementing new methodologies such as simulation in undergraduate curricula (Fini, 2018; Costa et al., 2018).

In Brazil, the approval of Law 9.394 / 1996 of the National Education Guidelines and Bases by the process of preparing and implementing the National Curriculum Guidelines, for nursing courses in the country, urged the need to recommend the implementation of methodologies that encourage students to reflect on social reality with a focus on training a humanist, critical and reflective professional, qualified to act in health situations (Brasil, 2001).

In this context, the learning scenarios seek to associate the didactic pedagogical methods with the areas of practices and experiences. Thus, simulation appears as a teaching tool that presents itself as a methodology that reproduces fictitious situations that allows the student to play an active role in understanding and solving the problem. In the context of teaching and learning in nursing, simulation has the ability to insert the student in an environment close to what they will face in reality, in addition to integrating the complexities of practical and theoretical learning with the opportunity for repetition, feedback, evaluation and reflection of the that was carried out (Lacerda et al., 2020).

Realistic simulation (RS) has a significant relevance in the performance of students in practice scenarios, since it allows the execution of care practices in a safe environment, in which the error is acceptable without generating risks to themselves and others, in addition to defining new strategies with a view to success before being subjected to practice. Another benefit of simulation is the interconnection between fragmented content from different disciplines in a single context, enabling the articulation of content in an interdisciplinary perspective (Fonseca et al., 2020).

The fictitious situations proposed in the simulation encourage the active participation of students, favoring their technical-scientific development in an environment in which mistakes are allowed and safe. The repetition of activities also provides professional and emotional security to the student, who will feel prepared to face the challenges of professional life (Rissi et al., 2020).

Simulation-based education in nursing is about countless activities using simulators, in which they use realistic virtual environments, high-fidelity mannequins and sophisticated devices. Education with this type of active methodology gives nurses or students the development of skills and a variety of authentic situations found in the real life scenario. The advantages of simulation include providing immediate feedback, repetitive hands-on learning, the ability to adjust the level of difficulty, and adapting the student

or professional to different types of learning scenarios (Kim; Hwa; Shin, 2016).

In the current scenario of education, it is possible to note that simulation as an active teaching methodology has been spreading worldwide, so nursing teaching from the use of simulation contributes to the development of evidence, expansion of the applicability of its use and improvement of quality of professional training. In this perspective, the present study is justified in obtaining evidence regarding the effectiveness of this methodology in the training of nursing professionals.

After contextualizing the problem, some questions about the study proposal lead us to reflect the following guiding question: What evidence is found in the literature regarding the application of realistic simulation as an active methodology in the process of training and developing professional practice in nursing? Given the context evidenced above, the objective of this study is to analyze evidence of the use and effectiveness of realistic simulation as an active method of teaching and learning in nursing in the academic and professional context.

2. Methodological Procedures

2.1 Eligibility criteria and search strategy

In a preliminary research in the Cochrane Database of Systematic Reviews, the Joanna Briggs Institute Library of Systematic Reviews and PubMed, with research related to Realistic Simulation as an active methodology in the training process, however, the outline of objectives is different from the one proposed in this research.

The research was guided according to the recommendations of Cochrane Collaborations for the following steps: 1st. Problem formulation; 2nd. Location and selection of publications; 3rd. Evaluation of the inclusion and exclusion criteria; 4th. Data collect; 5th. Analysis and presentation of results; 6th. Interpretation of results; 7th. Writing of the scientific article (Higgins; Green, 2011).

A preliminary search was carried out on the PubMed portal to identify controlled and uncontrolled terms contained in study titles and abstracts. The searches were carried out by two reviewers independently, the search terms and strategies developed by the main reviewer were validated by peers.

After determining the objective, formulating hypotheses to be analyzed, a search for scientific material was carried out in computerized databases to identify and collect the maximum relevant research on the topic to be discussed. The search was carried out from July to September 2020 using the databases related to the health area: Cochrane, ERIC, Medline, Science Direct and PubMed.

From the search in DeCs (Health Sciences Descriptors), the descriptors included for research in all databases were: Nursing, Active learning, simulation training. The crossing of the included search terms was performed using the Boolean operator AND.

The inclusion criteria applied in this research were: studies published in the period 2015-2020, in full, in Portuguese, Spanish or English, which presented as RS the contributions of RS as an active methodology in the process of training and development of professional practice in nursing.

Publications in the format of an editorial letter, theses and dissertations, poster or did not fit the review were excluded from this study.

From these, articles were selected, with inclusion criteria and exclusion criteria established, with the objective of verifying which are adequate to the guiding question of the study. The selection of studies by title and abstracts and by complete reading was performed by the primary (E.S.C) and secondary (G.A.S.O.) reviewer independently. The studies that generated some disagreement among the reviewers regarding the inclusion were discussed with a third reviewer (F.C.M.G). In data collection, criteria were used addressing authors, year of publication, methodological design, participants and sample, objectives and main results.

2.2 Data analysis

The results were presented through a descriptive and exploratory analysis of the data, showing the relationship / contributions of the simulation among nursing students, teachers and nurses.

3. Results

In view of the initial screening, a total of 1,921 studies were identified, 312 of which were indexed simultaneously in two or more databases. In sequence, the titles and abstracts were read, which after careful analysis resulted in 96 articles to be read in full. The final sample of this study was composed of 37 articles indexed in the proposed databases (Figure 1).

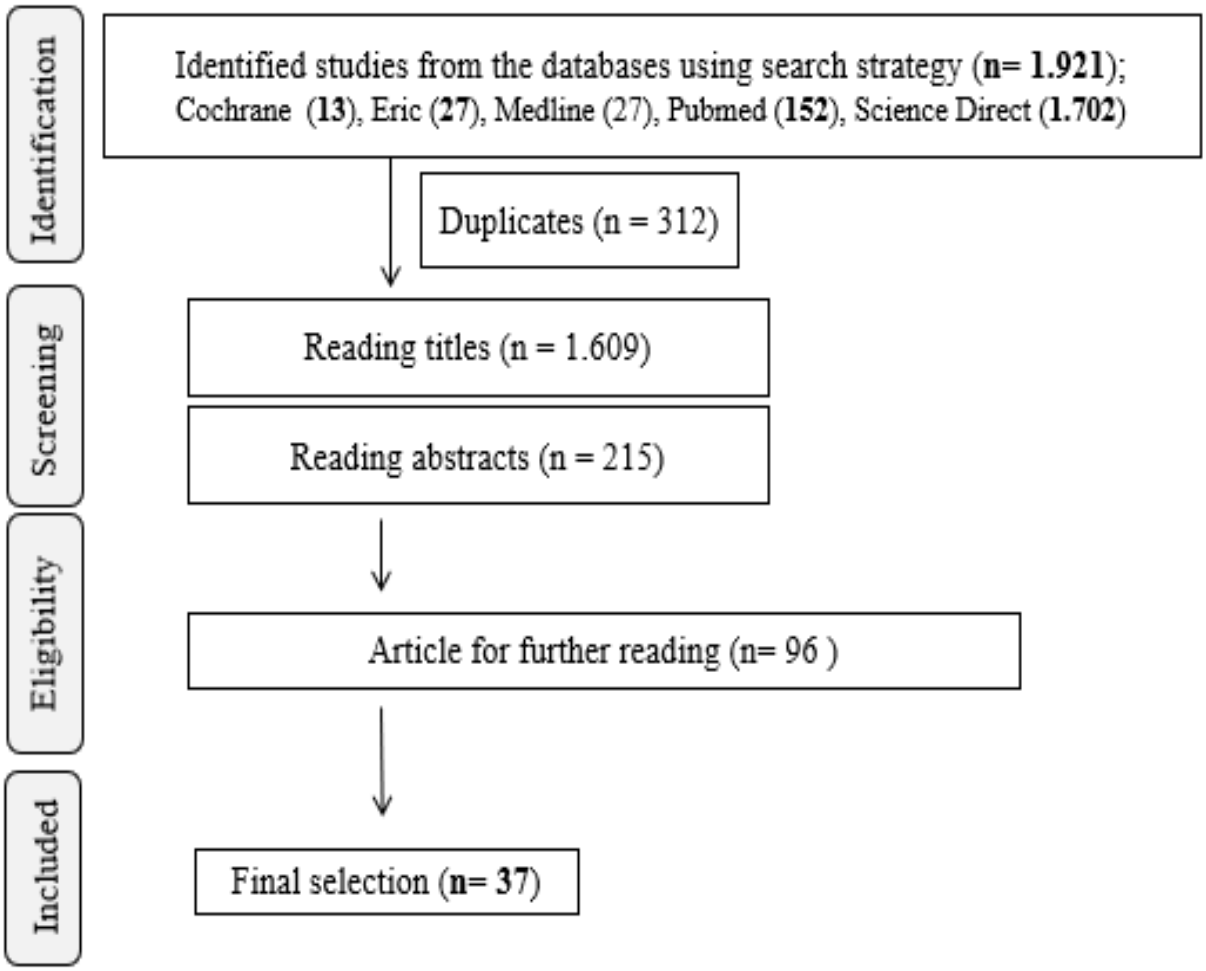

Figure 1. Flowchart of included studies.
Source: Own authorship, 2020

In analysis of the selected articles, characteristics were evaluated regarding year of publication, object of study, sample size used for the development of the research and main results. Regarding the year of publication, there is a predominance of publications in the period from 2016 to 2019, with eight articles published each year, followed by the years 2020 and 2015, with three and two articles published respectively.

The studies were carried out in nineteen different countries, including the USA (n = 11), Australia (n = 4), Norway (n = 3), Spain (n = 2), Canada (n = 2), Portugal (n = 2), United Kingdom (n = 1), Italy (n = 1), Sweden (n = 1), Hong Kong (n = 1), South Korea (n = 1), Thailand (n = 1), Iran (n = 1), Denmark (n = 1), Pennsylvania (n = 1), Ethiopia (n = 1), Turkey (n = 1), Israel (n = 1) and Lebanon (n = 1). The sample used for the research of the articles included ranged from 14 to 509 participants, resulting in 4054 participants, being students, nurses and educators. In view of the analyzed articles, it was observed that twenty-six studies addressed the use of simulation in the academic context (Table 1).

Table 1. Characterization of the studies included in the academic context.

Authors / Year	Location	Study design	Participants	Main results
Agea et al., 2018	Spain	Qualitative study	30 fourth year nursing students	▪ Students recognized the importance of learning about ethical issues through simulations reported having a positive feeling of well-being when participating in scenarios with bioethical content.
Berndt et al., 2015	Canada	Sudy does not experiment	l98 nursing students	▪ Simulation promoted their ability to make sound clinical judgments. ▪ Debriefing provided opportunities for students to articulate the process of reasoning and preparing for the next scene in the simulation scenario.
Bland; Tobbell, 2015	United Kingdom	Qualitative study	31 nursing students	Video data allows for more dynamic data, particularly because they capture social interaction and evidence of activity in the context inherent in simulation-based learning
Calohan et al., 2016	USA	Experimental study	15 nursing students	The simulation facilitates the preparation for clinical rotations to maximize the experiences. The faculty's feedback indicates that the simulation is a method to guarantee the standardization of experiences. students are better prepared for clinical practice and function more independently than students who have not experienced this standardized clinical simulation structure
Alconero-Camarero et al., 2016	Spain	Mixed, quantitative and qualitative study	150 nursing students	Most students reported that learning through simulation cases was useful and beneficial. Teachers must be well trained to implement clinical simulation. The importance of integrating theory into practice, as well as learning from your mistakes, improves classroom learning.
Curtis et al., 2016	Australia	Descriptive exploratory study	637 second and third year students of the Bachelor of Nursing	Peer teaching strategies can help overcome barriers to facilitate large cohorts and increase involvement. Students reported high satisfaction and self-confidence after exposure to the simulation experience conducted by a student with a medium level of fidelity. Medium level fidelity equipment is economical and can result in high levels of student satisfaction and self-confidence
Donovan; Mullen, 2019	USA	Quantitative research	160 nursing	Active learning with standardized patient scenarios increases self-confidence in the nursing skills learned; The use of the standardized patient simulation program adds to the real-world human

			students	interaction experience Simulation laboratories with an active learning model boost the retention of new knowledge by the student nurse.

Table 1. Characterization of the studies included in the academic context (continued).

Authors / Year	Location	Study design	Participants	Main results
Dubovi; Levy; Dagan, 2017	Israel	Study Quasi-experimental	104 nursing students	A positive correlation was found between the sense of presence and learning. Improving students' sense of control in virtual reality can improve the learning process. Virtual reality can bridge the gap between theory and practice in higher education.
Fawaz; Mansour, 2016	Lebanon	Study Quasi-experimental	56 nursing students	The high-fidelity simulation experience was useful in the development of clinical judgment, helping students to perceive, interpret, respond, reflect and make decisions. High-fidelity simulation enabled a safety training culture.
Griffiths, 2018	USA	Experimental study	205 nursing students	The students agreed that the scenario resembled real life and that the necessary supplies were available Instructor feedback was helpful for enhanced learning reflection and post-simulation summary.
Kaplan; Murihead; Zhang, 2017	USA	Post-test study	23 nursing students	The simulation increased the understanding of pathophysiology, communication with the health professional, the ability to think critically and challenge their decision-making skills. Student simulation experiences carried out in situ can leverage clinical partnerships.
Karlsen et al., 2017	Norway	Qualitative, exploratory and descriptive study	14 nursing students	Communication skills and their interaction with patients were evident. The use of standardized patients was seen as positive, giving a more realistic scenario, than acting against another student.
Lillekroken, 2019	Norway	Qualitative exploratory	150 nursing students	▪ The theoretical basis gained from their preparations helped them to reflect on how theory could be linked to practice.
Opsahl et al., 2019	USA	Descriptive study	173 nursing students	Students stressed that the event's realism enhanced the learning experience. Most students pointed out positive aspects of having resident nurses present.

Omer, 2016	Hong Kong	Qualitative, exploratory and descriptive study	117 nursing students	The results indicated general satisfaction with the clinical simulation experience. The data indicated high levels of self-confidence being built after the clinical simulation experience.
Padilha et al., 2018	Portugal	Qualitative, exploratory and descriptive study	426 nursing students	They pointed out greater ease, usefulness and willingness to use the virtual clinical simulator on an interactive table, in class and in a web application outside of class. Younger participants are more prepared and willing to use virtual technology.

Table 1. Characterization of the studies included in the academic context (continued).

Authors / Year	Location	Study design	Participants	Main results
Park et al., 2017	South Korea	Prospective study	69 nursing students	Increase disposition of critical thinking, and motivation to learn. The simulation was useful for integrating knowledge and skill.
Riley-Baker et al., 2020	USA	Descriptive study	253 nursing students	The simulation provides a safe and controlled environment for training nursing students. Among the four skill sets, students were more likely to achieve communication skills. Students' skills improved as the case evolved through the three care environments sequenced over time.
Rubbi et al., 2016	Italy	Prospective observational study	51 nursing students	It provided active learning by increasing levels of self-confidence, psychomotor and affective skills.
Samosorn et al., 2019	USA	Quasi-experimental study before and after test	21 nursing students	Students and teachers felt well immersed in virtual environments. Lessons learned can be reinforced on a traditional simulation dummy basis and real-world clinical settings. The intervention was widely accepted by students and teachers, showed a high level of virtual presence, absence of cybersickness and statistically and practically significant knowledge gains.
Unver et al., 2018	Turkey	Quasi-experimental study	69 nursing students	▪ Improvement in critical thinking, decision-making skills and self-confidence before clinical activity.

Valen et al., 2019	Norway	Qualitative exploratory study	55 nursing students	The participants reported that the simulation contributed to the participants' experience that influenced their knowledge, skills and attitudes. Debriefing made participants feel safer and more confident in practice.
Verkuyl et al., 2017	Canada	Experimental study	500 nursing students	▪ Virtual simulation provided students with opportunities for theoretical and practical integration.
Wang; Etrini, 2018	Thailand	Quasi-experimental study	104 nursing students	Collaborative practice in patient care settings has increased mutual understanding and improved attitudes towards teamwork. The performance gaps in the student team were notable. Team performance gaps imply that more preparation is needed to support student learning.

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▪ Table 1. Characterization of the studies included in the academic context (conclusion).

Authors / Year	Location	Study design	Participants	Main results
Webster; Carlson, 2019	Sweden	Descriptive observational study	100 nursing students	He results in relation to teaching to establish therapeutic relationships as a patient positive. Relation to the fusion of theory and practice for the development of therapeutic relationships, the responses indicated that simulation is a highly potent pedagogical method.
Zarifsanaiey; Amini; Saadat, 2016	Iran	Quasi-experimental study	40 nursing students	Scores on thinking and communication have been improved. Integrated training (simulation and critical thinking strategies), compared to simulation training, improves student performance

Source: Own authorship, 2020.

The research covered academics of different years. The studies that evaluated the use of simulation as a learning tool in the training of students mainly measured reasoning skills and clinical judgment (Berndt et al., 2015; Fawaz; Mansour, 2016), self-confidence (Curtis et al., 2016; Omer, 2016; Rubbi et al., 2016; UNVER et al., 2018; VALEN et al., 2019), critical thinking (Kaplan; Murihead; Zhang, 2017; PARK et al., 2017; Unver et al., 2018; Zarifsanaiey; Amini; Saadat, 2016), decision making (Fawaz; Mansour, 2016; Kaplan; Murihead; Zhang, 2017; Unver et al., 2018), communication skills (Riley-Baker et al., 2020; Zarifsanaiey; Amini ; Saadat, 2016) and Teamwork (Wang; Etrini, 2018).

Through the analysis of the research, it is also observed that the application of the simulation was carried out in various ways, such as the use of virtual reality (Dubovi; Levy; Dagan, 2017; Samosorn et al., 2019; Verkuyl et al., 2017), virtual simulators with clinical cases (Padilha et al., 2018), high-fidelity simulation (Valen et al., 2019) and simulation mannequins (Samosorn et al., 2019).

In the professional context, eleven articles were included in the research (Table 2), the articles approached the use of simulation encompassing nursing assistants and nurses working in teaching, focusing on the development and improvement of professional skills (Table 2).

Most surveys were carried out in countries in America (45.5%), followed by Oceania (27.2%), Europe (18.2%) and Africa (9.1%). The main results direct contributions to professional practice, especially with regard to care security (Bailey; Mixer, 2018; Boje et al., 2017; Turkelson; Keizer, 2020), increased knowledge (BLISS; AITKEN, 2018; Starodub et al., 2020) and Trust (Boyde et al., 2018; O'leary; Nash; Lewis, 2015).

Table 2. Characterization of studies included in the professional context.

Authors / Year	Location	Study design	Participants	Main results
Bailey; Mixer, 2018	USA	Descriptive exploratory study	10 nurses	The participants showed more security when performing the simulation and described that the more realistic the simulation, the better the performance in practice. In addition, the program contributed to clinical competence and therefore patient safety.
Bliss; Aitken, 2018	Australia	Qualitative exploratory study	8 nurses	▪ All participants reported that the simulation improved their knowledge and realized that they could transfer knowledge and skills to the practice environment. Simulation realism was an important factor in retaining information.
Boling et al., 2017	USA	Descriptive exploratory study	100 nurses	Participants reported that simulation is important for their learning, and participation was more beneficial than a lecture on the topic. ▪ Custom scenarios are delay to create, but can be more valuable than inventory scenarios.
Boje et al., 2017	Denmark	Observatory and descriptive study	33 nurses educators	▪ Significant increase in confidence through simulation. A definite barrier to the effective simulation identified was time.
Boyde et al., 2018	Australia	Quasi-experimental study	50 nurses	▪ The results support the positive simulation learning experience about anxiety, self-efficacy in clinical performance, satisfaction and self-confidence in learning and clinical improvement.
O'leary; Nash; Lewis, 2015	Australia	Quasi-experimental study	30 pediatric intensive care nurses	Participants demonstrated significant increases in knowledge scores after learning by having greatest gains in items related to trust. ▪ The simulation increases the self-efficacy of pediatric intensive care nurses, improves knowledge retention compared to standard instruction.
Padilha et al., 2020	Portugal	Cross-sectional study	131 emergency nurses	Emergency nurses perceive virtual clinical simulation as an important complementary strategy in their lifelong learning. Average perceived ease of using CVS of 9.03, perceived utility of 9.14 and an intention to use CVS in lifelong learning of 8.85.

Recznik et al., 2019	Pennsylvania	Randomized study	25 nurses	All participants had a satisfactory improvement in screening. The groups were not significantly different from each other, there seems to be an educational advantage for either method.

Table 2. Characterization of the studies included in the professional context (conclusion).

Authors / Year	Location	Study design	Participants	Main results
Starodub et al., 2020	USA	Randomized study	52 nurses	Simulation-trained professionals benefit from retaining their knowledge of target temperature management for longer. The simulation resulted in an immediate improvement in the target temperature management skills and the participants in the simulation group were more satisfied with the training.
Teni; Gebretensaye, 2019	Ethiopia	Quantitative and qualitative descriptive	99 nurses	Professionals trained in simulation benefit by maintaining 83.8% agreed that clinical simulation improves students' knowledge, skill, critical thinking and confidence. Nursing educators with bachelor's degrees showed better knowledge than those who have a master's degree.
Turkelson; Keiser, 2017	USA	Quasi-experimental study	26 nurses	▪ Better adherence to critical care processes and reduced errors in patient management in simulations as well as real patient events.

Source: Own authorship, 2020.

4. Discussion

In view of the use of realistic simulation as an educational tool, studies that met the inclusion criteria were more frequent in the academic context than in the professional context, with a predominance of publications in the period from 2016 to 2019.

The National Curricular Guidelines for the Nursing course highlight the need and importance of training health professionals with the acquisition of competence for decision-making, critical thinking, based on practical knowledge capable of evaluating appropriate behaviors in face of their reality. In this context, from the analysis of the articles, it is observed that the RS as an educational tool provides the acquisition and development of innumerable competences and skills necessary for students and nurses in addition to psychomotor and affective contributions among the participants, improving the assistance and effectiveness of the care provided.

Regarding the benefit of the simulation, it is possible to observe in three studies that the realism of the simulation was a highly relevant factor for better information retention and that the more real the simulation scenario, the similarity with the practice becomes even closer (Nopsahl et al., 2019; Griffiths, 2018; Bailey; Mixer, 2018; Bliss; Aitken, 2018).

The use of virtual clinical simulation has relevant potential to improve practice in teaching and learning by both students and nurses. It is noteworthy that the use of virtual simulation with technological innovation, obtained a favorable acceptance by most professionals, being a pedagogical method that allows the obtaining of different dynamic scenarios that favors clinical reasoning. In addition, the articles list that virtual simulation provides greater utility and ease, since it allows the presence and realization on virtual platforms on the internet, bringing more comfort and convenience to participants in any location (Padilha et al., 2020; Padilha et al., 2018).

The RS environment is controlled, so it is possible to avoid exposing patients to risk situations resulting from inexperience by Nursing students. In this way, students are able to think critically about what has been accomplished by learning from their mistakes, making it possible to adopt safer behaviors and strategies aimed at patient safety (Bailey; Mixer, 2018; Alconero-Camarero et al., 2016).

Videos are also part of the learning process along with methodologies such as simulation, thus bringing several cases of patients to class. Thus, students can apply whatever content was learned in class by increasing clinical reasoning. Results of a study in which the participants received video training and high-fidelity simulation, it was possible to observe that they obtained better scores of psychomotor skills after the intervention when compared to the participants who received training by video lecture (Starodub et al., 2020; Powers, 2020).

In some studies, it was possible to observe that participants of a younger age group are more prepared and willing to use virtual technology. Another study that addressed virtual simulation among educators showed that nursing educators with a bachelor's degree obtained adherence and greater ease compared to those who have a master's degree. This may be due to those who have a bachelor's degree being recently graduated with greater ease and better acceptance to understand and use the teaching methodology (Padilha et al., 2018; Teni, Gebretensaye, 2019).

As most of the articles analyzed, it is possible to show that there is an increase in confidence and greater engagement of students and nurses in relation to their conduct, since the various scenarios promoted by the simulated environment are capable of reproducing some situations experienced in real life assistance that often become impossible in clinical practice during graduation (Valen et al., 2019; Donovan, Mullen, 2019; Unver et al., 2018; Curtis et al., 2016; Omer, 2016; Rubbi et al., 2016; Teni, Gebretensaye, 2019; Boyde et al., 2018; Boje et al., 2017; O'leary; Nash; Lewis, 2015).

The acquisition of skills and values through RS is evidenced by the development of attributes related to the cognitive field, psychomotor, affective and communication activities that provided the development of more human aspects and therapeutic relationships in care, allowing greater proximity and interaction with patients (Rubbi et al., 2016; Karlsen et al., 2017; Agea et al., 2018; Webster; Carlson, 2019).

From this perspective, Doolen and contributors (2014) states that the simulation reinforces the idea of acquiring appropriate strategies to face psychological issues such as communicating bad news to patients at the end of their lives, as well as communicating with patients with depression, schizophrenia and anxiety.

It is noteworthy that problem-based learning (PBL) helps in personal interpretation based on a problem, thus strengthening the learning processes and ability to solve the problem, in addition to understanding the performance scenario with group discussion, improving the relationship with the integration of ideas in different aspects of the case (Zarifsanaiey; Amini; Saadat, 2016).

It was observed in some articles that simulation is seen as a vehicle for the development of critical thinking and clinical reasoning, promoting greater effectiveness in care. This justification is also supported by a study in which it states that a simulated situation allows students to think more actively than passively, facilitating the development of critical thinking and decision making (Teni; Gebretensaye, 2019; Padilha et al., 2020, Park et al., 2017; Bento, 2014).

After the moment of the simulation, the debriefing takes place, which becomes a moment of great relevance, since through it is possible to list the positive points and actions that were not carried out, in addition to solving doubts about the behaviors taken by the student. After evaluating some articles, it is possible to notice that debriefing provided opportunities to articulate the reasoning process and preparation for the next simulation scenario, anticipating the potential complications of the patient and the desired results. It is worth mentioning that this moment also leads the student to develop new models of thinking and feedback on theoretical and practical knowledge (Berndt et al., 2015; Alconero-Camarero et al., 2016; Vallen et al., 2019).

In contrast to the advantages offered by the use of simulation, limitations are reported mainly regarding the implementation of the method in undergraduate nursing courses and inadequate planning for the implementation of the method. In research by Padilha et al. (2018) and Boje et al. (2017), there was a need to have more time to carry out the proposed interventions. This information is justified in another study that lists the need for highly sophisticated technologies, training for teachers involved in simulation, continued preservation of materials since they have a high degree for institutions (Pereira, 2017).

With this study, some educational tools essential for maintaining the simulation inserted in the teaching-learning process can be added, given the andragogy. Andragogy is defined as a teaching strategy for adults in which it starts from the premise of emancipating the student so that he develops autonomy and builds self-directed learning. Thus, the teacher moves away from the vertical model of teaching by approaching

and integrating teaching strategies such as simulation since these two methodologies are based on real life experiences (Moura, 2013).

Andragogy can be combined with different teaching-learning theories. It is worth mentioning that this method needs to be reassessed for each situation, as it is not an ideology, but a system of elements. In addition, it is up to the educator to evaluate the best way to apply the model in each scenario (Andrade, 2015; Waxman, 2010).

The relevance of this method for the learning of students and nurses is noticeable, however, little research has been found on the use of this learning method in nursing.

5. Conclusion

The present study analyzed the evidence of the use and effectiveness of realistic simulation as an active teaching method of teaching and learning in nursing, in addition to contributions to the process of training and development of professional practice in nursing. Given the studied scenario, it can be seen that several articles address simulation as a methodology that allows students to acquire competence, skills, autonomy, leadership, confidence, security and association with various disciplines, integrating theory with practice and inserting students and nurses in environments that simulate the reality of care, improving clinical reasoning and critical judgment for decision making.

Taking into account the aspects related to the debriefing that is carried out after the simulation scenario with the teacher / instructor, it is well known that this moment provides an opportunity to articulate the reasoning process, evaluating the mistakes made and correcting them in order to avoid them during the assistance in reality with the patient.

It is worth considering that the RS makes it possible to build new ways of carrying out health training, surpassing traditional teaching models. On the other hand, there are several limitations to its applicability, since despite presenting high fidelity in the scenario with the programming for the reproduction of clinical signs, the simulator does not foresee complications seen in practice resulting from the action performed by the student.

In view of the aspects mentioned above, other limitations of the RS can be highlighted, given the need for highly sophisticated investment requiring allocation of large financial resources by the institution. In addition, the application of a simulation center requires professionals, in this case teachers / instructors trained to command software, robots and others. Therefore, it is necessary to invest in the training of this instructor in courses, considering that it is a relatively new strategy and that needs to be updated in order for it to happen effectively, ensuring the robustness of the teaching-learning process.

From the reflections presented, it was found that RS is a potentially transforming teaching method in the training context in nursing, preparing students and nurses so that they meet the different health needs and transform the realities to which they are inserted.

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