

The Teaching and Learning Process of Multiprofessional Residents on Patient Safety and Quality of Health Care: A Systematic Review.

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Revised Article

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Article Information

Received: 19-01-2023;
Accepted: 01-02-2023;
Published: 21-02-2023.

Abstract

Introduction: For the World Health Organization, patient safety can be defined as the reduction of risks during patient care practices. Thus, it is vital that the health area student develops competencies on this theme in a transversal way during his/her formation. During residency, the teaching of this topic should be continued, because now more than before, it is up to the healthcare professional to identify errors, take appropriate measures to reverse them, and prevent them in a timely manner. **Objective:** To identify the knowledge of multiprofessional residents about patient safety that contributes to the development of quality health care. **Methods:** This article is a systematic literature review, where the descriptors "patient safety", "knowledge", "Internship and Residency" were used in the Pubmed, BVS and Science Direct databases. Based on the inclusion and exclusion criteria established by the authors, 251 articles were initially selected. **Results:** 27 articles made up the final sample and were arranged in a timeline from 2010 to 2021, thus year by year the articles were arranged.

Conclusion: Most participants saw as of great importance the approach to the patient safety theme during residency. The teaching and learning process was carried out in a heterogeneous way in the residency programs, making clear the need for a greater coverage of the theme and homogeneity of teaching, so that the learning can be more effective and consequently the patients can have better care assistance.

Introduction

The commitment to patient safety around the world has been growing since the 1990s. This growth was motivated by two landmark reports: "To Err is Human", produced in 1999 by the Institute of Medicine in the USA, and "An Organization with a Memory", published in 2000 by the Chief Medical Officer in the UK. Both reports recognized that error is routine during health care and occurs in about 10% of hospital admissions. In some cases, the harm caused is severe and even fatal.

In 2002, the WHO member states, during the World Health Assembly, signed an agreement on patient safety. It is about the need to reduce the harm and suffering of patients and their families, as well as highlighting the obvious economic benefits that improving patient safety brings [1]. In April 2013, to foster the implementation of initiatives aimed at patient safety, the

National Program for Patient Safety was instituted [2]

For the World Health Organization (WHO), patient safety can be defined as the reduction of unnecessary risk and harm to an acceptable minimum, and patient care practices are closely related to this process. Recognizing the magnitude of the problems related to this scenario, in 2004 the WHO established the World Alliance for Patient Safety, which was created with the objective of defining and identifying priorities in the area of patient safety at a global level and stimulating the development of research in the field. Among the proposed actions are: maternal and child health care; health care for the elderly; adverse events (AE) related to medication errors; fragile safety culture regarding the process of accountability for error; inadequacy of competencies and skills among health professionals; infections associated with health care. [3]

Patient safety culture is considered an important structural component of health services, which favors the implementation of safe practices and the reduction of adverse events (harm to patients caused by failures during the care provided). It can be defined as the product of values, attitudes, perceptions, skills and behavior patterns of groups and individuals that determine the commitment, style and proficiency in the management of patient safety in health services [4].

Healthcare professionals must have the knowledge and skills to identify errors and take appropriate measures to reverse them, as well as prevent them in a timely manner, so that changes can occur in the safety culture of organizations [5] [6].

It is vital that health care students develop skills on this topic as a cross-cutting reference, as the basis of their training. They are members of the health care teams in charge of building their practices together with other professions focused on safety [7].

Moreover, an approach during graduation and in residency programs, that is, in in-service training, that exceeds the teaching of isolated practices could collaborate in the formation of professionals who are more responsible about the issue of patient safety [8].

The Patient Safety Curriculum Guide of the World Health Organization of 2011 recommends that this occurs since the formation, starting since the entrance in a hospital, clinic or health service and that it extends to continuing education[9]. The residency represents more than a search for improvement of the professional competence acquired in school. When entering this post-graduation, one looks for training in some specialty; progressive acquisition of responsibility for professional acts; development of the capacity of initiative, judgment and evaluation; internalization of ethical precepts and norms; and the development of critical spirit [10]. All these functions make the medical residency represents a deep mark in the professional profile of the future physician.

In Brazil, there are different mechanisms for the formation of specialist physicians. Residency is not obligatory for the practice of medicine in the country, so some doctors start working immediately after finishing the six years of medical school. Instituted by Decree nº 80.281, from September 5th, 1977, medical residency is a post-graduation teaching modality destined to doctors, in the form of a specialization course. It works in health institutions, under the supervision of medical professionals of high ethical and professional qualification, being considered the "gold standard" of medical specialization.

On the other hand, the multiprofessional and professional health residency programs were created after the promulgation of Law #11.129 of 2005, and are guided by the principles and guidelines of the Unified Health System (SUS), based on the local and regional health needs and realities of the population. They encompass the health professions of Nursing, Pharmacy, Biochemical Pharmacy, Physiotherapy, Veterinary Medicine, Nutrition, Dentistry, Psychology, Social Service, Occupational Therapy, among others [11].

The Residencies constitute a space for the construction of new knowledge, and theoretical and practical multiprofessional analysis, through teaching-service integration, with differentiated performance in the health care network. It is also a promising scenario for the development of Continuing Education in

Health, becoming a powerful instrument of transformation related to the construction of knowledge and solid formation of professionals.

Given this importance of the resident in the service performance scenario, it reinforces the need to study the formative space of residencies, in this case focusing on patient safety, since, besides actively contributing to the context of health professionals' training, the programs are able to stress elements of social policy in the daily movements of interprofessional practices. It may be that in developed countries this problem has been solved, but certainly in developing countries, such as Brazil, the training is deficient, which often makes the process of patient care unsafe and ineffective.

Considering, therefore, that residents are two sides of the same coin, i.e., they are professionals and also "apprentices", or students in in-service training, acting in complex environments in a process of professionalization, and that it is necessary that all professionals involved understand the extent of damage to patients, the question is: do the care activities developed by residents contribute to increase the quality of care?

Therefore, it was established as the goal of the study to compile evidence that can be used by the scientific community, especially by tutors of residency programs and for future research in order to improve knowledge on the subject, in addition to enabling educators and health professionals to make up-to-date and evidence-based decisions to promote learning and teaching skills in health care.

To this end, the aim of this study is: To identify the knowledge of multiprofessional residents about patient safety that contribute to the development of quality health care. Based on the data obtained, this systematic review plays a key role in building knowledge on a topic that tends to grow in the scientific community, especially in the health field, and is a determining factor for professional success.

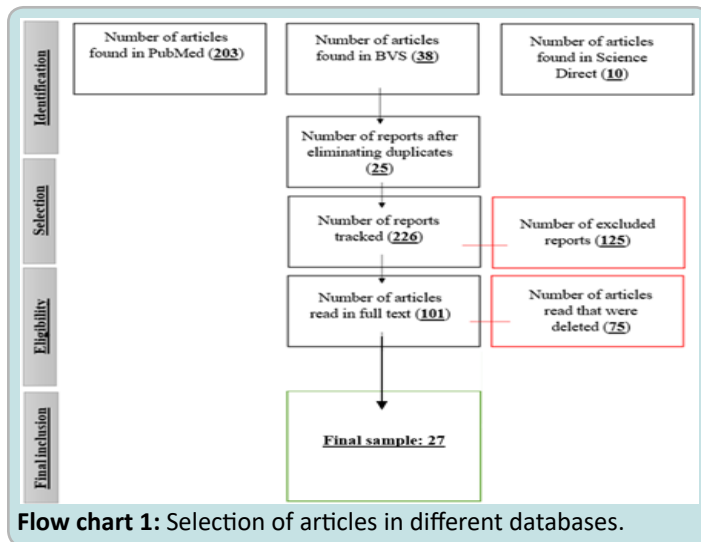
Methodology

This is a systematic literature review, in which the following descriptors were used: "patient safety", "knowledge", "Internship and Residency", in the databases: Pubmed, BVS and Science Direct. The review was carried out according to the Cochrane Collaboration and PRISMA - Preferred Reporting Items for Systematic Review and Meta-analysis Statement recommendation. Such terms were extracted from the guiding question, based on the PICO mnemonic, structured as: 'Does the knowledge of multi professional residents about patient safety contribute to the development of health care quality?'

This systematic review was submission to Prospero under ID 320450

The selection of these articles was carried out in two stages: reading the titles and abstracts, reading the full article. The selection was made independently of two of the researchers based on predefined inclusion and exclusion criteria.

The study included articles from the last 10 years, in English, Spanish or Portuguese, with full text and free access. At the end of the first search, performed by independent researchers, 251 articles were selected by title, being 203 found on the Pubmed platform, 38 in the VHL, and 10 articles in Science Direct. The second step of the search was the exclusion from the reading of the abstracts, and thus, a total of 101 articles were reached.



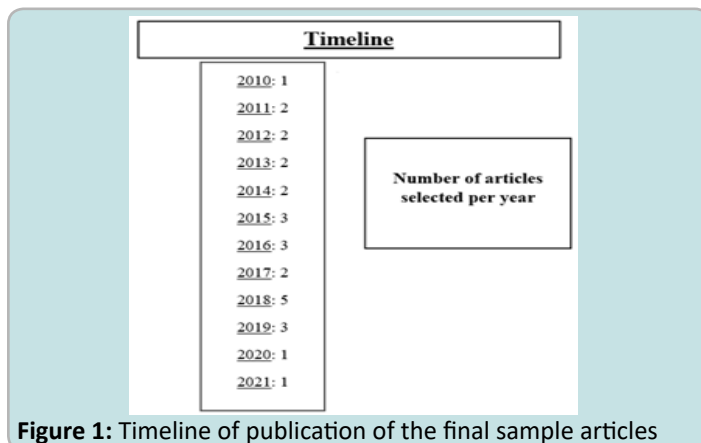
The third step was the reading of the articles in full, performed by all authors, arriving at a sample of 46 articles included. The fourth phase was based on a new reading for consensus among the researchers, and after the selection, a consensus meeting was held for the dissenting selections and the help of the third author was also used for the tiebreaker. The final sample was established at 27 articles.

Results

According to flowchart 1, of the 27 articles selected, 18.5% of the articles were from 2018, followed by 15% from 2019. In the years 2015 and 2016, the percentage was 11% for each year. About 7.5% in the years 2012, 2013, 2014 and 2017. Finally, 3.7% were in the years 2010, 2011, 2020 and 2021.

As for the nationality where the studies were conducted, most of them were conducted in the United States (21), followed equally by studies from Portugal (1), Australia (1), Canada (1), Spain (1), England (1), Mexico (1).

About how the results will be exposed, it was decided to make a timeline, considering the diversity of methods and outcomes found in all the articles, thus making it impossible to categorize the information gathered. The timeline, pedagogically, will guide the presentation of the results, which were identified after in-depth reading, and will facilitate the understanding of the whole, starting with the oldest article until reaching the most current one (Figure 1).



2010

A study conducted with multiprofessional residents by Augustine et al entitled: "Benefits and Costs of Pay for Performance as Perceived by Residents: A Qualitative Study", 2010, evaluates the bonus for performance and how it can affect the quality of patient care. At the end of the survey, advantages and disadvantages about pay for performance were listed. The selected group then pointed out as disadvantages: inadequate use of resources, increase in undesirable treatments and increase in stress. As advantages, it highlights the increase in quality of care, motivation to improve care, adherence to guidelines, standardization of care, focus on prevention and surveillance goals, all of which directly or indirectly lead to improvement and reflection about patient safety during multidisciplinary care. [12]

2011

The article "Credentialing of surgical skills centers", written in 2011 by Sachdeva [13], analyzed the impact of surgical education and training based on simulation and how it affects the quality of patient care and patient safety. Thus, by developing surgical skills in safe and controlled environments, the study participants were assessed. With this, experience, knowledge, and mastery can be achieved through repetition of tasks in simulation scenarios, and be assessed and verified through validated and reliable methods. Thus, it is expected that new models of education through simulation will be introduced within medical course curricula.

2012

For Bradley et al, [14], pediatric residents were selected for a telephone survey that aimed at patient safety knowledge with a focus on medical errors, in the article called "Trends in Medical Error Education: Are We Failing Our Residents?" In the end, 94% of the 55 residents said that they had discussed medical errors informally during their residency, however 74% of them reported that they rarely learn from a mistake made by a chief physician or colleague because they are not discussed due to fear of judgment of incompetence, 78% of the residents have undertaken quality of care improvement projects, and none of the projects included the topic "medical error". Finally, it was found that the errors made by residents would be associated with lack of teamwork and lack of technical competence.

Teaching patient safety in clinical practice was analyzed by residents in the field of gynecology and obstetrics and presented in the article "Using the health-care matrix to teach and improve patient safety culture in an OB/GYN residency training program" by Rad et al., (2012). The study was based on discussion of clinical cases called matrix and monthly proposed interventions and changes. In 26 meetings held, 100% of residents saw the meetings as helpful, 39% felt positive changes in their communication skills, 29% felt shy about reporting possible errors to superiors, and in 92% of cases, after the matrix meeting, the changes discussed by the team were implemented. [15]

2013

For Moris de la Tassa et al, it is essential for health professionals to be aware of all those involved in health care to ensure patient safety. In their study: Survey on the culture of patient safety among Spanish health care residents, a total of 369 residents from Asturias (Spain) in 2013 answered the 'Thomas Jefferson Survey on Adverse Events in Inpatients', a translated and validated tool,

and their responses were analyzed. Thus, most of them attribute more responsibility to patients (54.4%) than to physician errors (28.7%). Moreover, 50% of the respondents agree that adverse events (AEs) can be avoided. Also, according to 72% of the responses, AEs were observed in the last 2 months prior to the survey, and 37% of the participating residents would be willing to work on improving patient safety. Therefore, we concluded the importance of including this topic in the medical curriculum, as well as educational and training programs to reduce and prevent AEs in clinical practice. [16]

In July 2013 the Society of Neurosurgeons introduced regional courses to promote patient safety and teach fundamental skills and knowledge to first-year residents of neurosurgery programs affiliated with the society, based on this theme the article [17]. "Society of Neurological Surgeons boot camp courses: knowledge retention and relevance of hands-on learning after 6 months of postgraduate year 1 training" was conducted. The authors measured the effectiveness of the residents' knowledge acquisition through a 6-month post-course survey. Of the 196 participants, 99% of them believed that the training courses benefited beginning neurosurgery residents and imparted skills and knowledge that improved patient care.

2014

Also, in the American study 'Quality Improvement Education Incorporated as an Integral Part of Critical Care Fellows Training at the Mayo Clinic', written by Kashani et al, a pilot medical education program was applied to 20 intensive care internal medicine fellows from 2010-2011, from a medical school, with the aim of improving quality and safety in patient care, through practical and theoretical classes, as well as evaluations at the end of the period. In this, most participants recognized the importance of the training before entering the job market, as well as the introduction of the program as mandatory for course completion. [18]

On the other hand, Swary and Stratman [19], in 'Practice gaps in patient safety among dermatology residents and their teachers: a survey study of dermatology residents', 2014, analyze patient safety deficiencies among 142 dermatology residents from 44 medical residency programs in the United States and Canada. Among the results, 45.2% of respondents admitted to having failed to report needle stick injuries sustained during procedures, 82.8% have taken advantage of patient progressions performed by others without confirming their validity, as well as 96.7% have incorrectly labeled exam or biopsy specimens. In addition, 78.3% of the residents reported witnessing an attending physician ignoring or disregarding the necessary safety measures on purpose. With this, the study demonstrates the silent practice of patient safety errors in a dermatology residency setting.

2015

In the English study by Jha et al. (Patients as teachers: a randomized controlled trial on the use of personal stories of harm to raise awareness of patient safety for doctors in training), 142 physicians underwent training on patient safety through personal narratives of patients who had suffered health-related harm. The narratives were followed by 1 hour of discussion, and so, through this, the study attempted to measure the impact of narrative on physician training. The effectiveness of storytelling could not be measured in the primary outcome, however changes in attitude, attitudes, empathy, and communication on the part of the residents were perceived. [20]

The article entitled: "CT Dose Reduction Workshop: An Active Educational Experience", by Nachiappan et al, [21] gathered 48 participants radiology residents, medical physicists, and technologists, all of whom participated in a workshop where patient safety was specifically addressed in the context of CT radiation reduction in diagnostic imaging methods. For the authors, radiation leads to several adverse effects to the patient, and it is up to the physician to indicate or reduce them, so during the entire period of the course, which lasted 1 year, with monthly attendance, the physicians in question discussed the reduction of CT radiation, continuity of diagnostic image quality, and patient safety. Not all participants attended all course sessions, with 32% attending 5 or more sessions. Of all respondents, 80% saw the course as necessary, 95% gained increased confidence in reducing radiation dose. 90% believe that it is the radiologist's responsibility to know about CT dose reduction and to indicate it.

For Leschied et al. [22] in the article "Improving our Product: A quality and safety improvement project demonstrating the value of a preprocedural checklist for fluoroscopy" first and second year radiology residents performed pre-use testing of ionizing radiation for imaging exams. 778 exams were analyzed from first-year residents, while 941 tests from second-year residents were studied. Knowledge about radiation technique was similar in both groups, however, confidence in safe operation was higher in the more experienced residents (2nd year). For the authors, the pre-use of radiation list is a tool that assists both residents and patients as radiation has its use with greater safety, besides the tool contributes to a culture of awareness.

2016

In 'Integrating Patient Safety in the OMFS Curriculum: Survey of 4-Year Residency Programs' by authors Suzane Morse and Jack Buhrow, a multiple-choice questionnaire was administered to 27 directors of oral and maxillofacial surgery residency programs in 2012 to assess whether they were aligned with the recommendation of the Institute of Medicine's Committee on Education for Health Professions to incorporate patient safety training into the medical curriculum. In this, 95% of participating programs had integrated patient safety training into the residency curriculum, with 70% achieving between 2 and 10 hours of training per academic year. With this, the study concludes that most residency programs have patient safety in their curricula, although it varies in the way it is applied. [23]

Use of spaced education to deliver a curriculum in quality, safety and value for postgraduate medical trainees: trainee satisfaction and knowledge, by Bruckel et al. (2016), an education course on quality, safety and value was implemented for 1950 residents, and the course completion rate was analyzed, as well as a post-course survey evaluating the student's knowledge by the percentage of correct answers. In it, knowledge about patient safety was relatively poor, reinforcing the idea that trainees need specific training in quality and safety principles, and that it should be inserted in the beginning of medical graduation. [24]

In the study, The Armstrong Institute Resident/Fellow Scholars: A Multispecialty Curriculum to Train Future Leaders in Patient Safety and Quality Improvement, by authors Rinke et al. [25], residents who took the Armstrong Institute Resident/Fellow Scholars (AIRS) quality improvement curriculum, which was composed of workshops, weekly lectures, projects, and hands-on activities, were evaluated. Two assessments were applied,

one before and one after the curriculum. In this, the scores of the residents improved significantly in the second compared to the first evaluation. Also, 92% of those evaluated agreed that the skills acquired at the event will help in their future careers.

2017

The survey titled "We Are Going to Name Names and Call You Out! Improving the Team in the Academic Operating Room Environment" by authors Bodor et al. [26], analyzed 50 healthcare professionals (18 surgeons, 14 anesthesiologists, and 18 nurses) and aimed to analyze basic principles of identification in the surgical environment. One of the parameters analyzed in the study was about the professionals present inside the operating room, and it was found that surgeons and anesthesiologists had little knowledge about their trainees, especially those who were at a lower level than them, while the nurses group performed better. Another parameter analyzed was about the role of each team member, and again the same results were found as in the previous parameter. As alternatives, the participants proposed to identify the participants of the surgeries in charts or labels. In the end, the participants believe that knowing the name of the residents and their functions helps the team function and the safety of the procedure.

The last study that was selected in the year 2017 was written by Americans Kevin Real, Katelyn Fields-Elswick, and Andrew C Bernard, named: "Understanding Resident Performance, Mindfulness, and Communication in Critical Care Rotation" [27]. This study surveyed 51 medical residents who were practicing in intensive care units. The study contained two phases, the first with self-reports on mindfulness, decision-making, affects, and communication, and the second phase with resident performance assessed through ratings of mindfulness and clinical decision-making. For the authors, all residents perceived mindfulness, communication and emotion as critical to the resident's clinical decision making, those with high levels of negative emotions tended to perform poorly, furthermore, those with the lowest performance tended to overestimate their performance and mindfulness, however, the opposite profile (high performance, tended to undervalue themselves) was also verified by the authors.

2018

In the manuscript: "An Inpatient Patient Safety Curriculum for Pediatric Residents", pediatric residents were invited to discuss the topic of "patient safety" through monthly meetings (5 total meetings lasting 1 hour each) in order to implement improvements in their residency curriculum. In the meetings, topics such as terminology, the phenomenon of the second victim and medication errors were discussed, along with feedback on recent cases attended by the residents. It was concluded from this project that participants showed statistically significant improved safety attitudes and preparedness to apply safety in their future care; on the other hand, there were no significant changes in non-participants. In addition, participants would benefit from more information about the topic. [28]

Bridging the Gap: Interdepartmental Quality Improvement and Patient Safety Curriculum Created by Hospital Leaders, Faculty, and Trainees, aimed to create an interdepartmental curriculum to train first-year residents in basic patient safety principles by measuring outcomes in knowledge, attitudes, and event reporting. 140 residents participated in this study, 3 sessions were held, pre

and post tests were administered during the meetings. Overall, knowledge scores improved (44% versus 57%, $P < 0.001$) and 72% of residents demonstrated increased knowledge. Residents who participated in the study reported greater patient safety learning than residents not exposed to the curriculum (0.39 events per trainee versus 0.10, $P < 0.001$). [29]

"Delivering on the Promise of CLER: A Patient Safety Rotation That Aligns Resident Education With Hospital Processes", second-year residents had a 2-week training course on patient safety[30]. First the residents were exposed to terminology on the topic, then they applied key concepts through simulations, and finally, each resident reviewed an adverse event and presented it to the organizing committee. Several outcomes were evaluated, such as satisfaction, attitudes, knowledge changes through testing, resident safety, and communication. Of the 22 residents who completed the course, 80% indicated an interest in working in patient safety in the future. 44% improved their knowledge of the topic. In the end, for the organizing committee, the oral presentations were of a high-quality level, however, the vulnerabilities presented were essential for practice and curriculum changes.

Diagnostic accuracy in Family Medicine residents using a clinical decision support system (DXplain): a randomized-controlled trial, aimed to compare the diagnostic accuracy of family medicine residents with and without the use of the clinical decision tool. The clinical decision platform used in the article is called DXplain, so the 96 residents participating in this study resolved 30 cases, some with the support of the platform and others without it. In the end, the group that used the tool had more correct answers, contributing to the improvement of the quality of medical practice and consequently providing more safety to the patient. [31]

The Development of a Novel Perfused Cadaver Model With Dynamic Vital Sign Regulation and Real-World Scenarios to Teach Surgical Skills and Error Management was a study with the secondary objective of evaluating the impact of a medical residency curriculum with the use of scenarios to teach surgical skills and error management. Twenty-six residents participated and it was evident that they felt that the settings helped them acquire new knowledge, learn more about surgical techniques, increase their confidence in performing activities in the clinical-surgical setting, and were able to minimize errors overall. [32]

2019

Aiming to analyze the teaching of clinical pharmacology during the medical course and its applicability in the patient's therapeutic decision, the authors Boaventura et al, [33], in the article 'Perception and Attitudes About Rational Prescribing During Medical Training: Results of Focus Groups with Medical Students and Intern Doctors', apply questionnaires to medical students from different periods of the course. By analyzing the results, an evolution of concepts is identified throughout the academic training, in which safety and adaptation to the patient's individual characteristics emerged mainly in the internship, where most of the interviewees already felt prepared for a rational prescription, even in complex clinical situations, which demonstrates the effectiveness of pharmacology teaching throughout the medical course. In 'Preventing Error in the Operating Room: Five Teaching Strategies for High-Stakes Learning', by Sampene et al, the research consisted of a comparison of student and resident responses about successful intraoperative teaching and how to prevent

medical errors. Five strategies for intraoperative error prevention were identified, such as augmenting verbal instruction with small physical actions, pausing the surgical procedure to explain the big picture, and communication between the parties involved. Thus, it was realized that success in intraoperative teaching depends a lot on the relationship between the medical staff. [34]

Also, the authors Weis et al, [35], in the study 'Multidisciplinary Simulation Activity Effectively Prepares Residents for Participation in Patient Safety Activities' analyzed the performance of 39 students from various postgraduate medical specialties through a patient safety simulation scenario, where the participants completed a before and after questionnaire. In this, significant improvements were observed in performance before and after the simulation, and in participants' self-reported abilities to perform patient safety-related tasks. Thus, an increase in students' confidence and knowledge towards patient safety situations was perceived after conducting clinical simulation.

On the other hand, in the study: Resident Competency and Proficiency in Combined Spinal-Epidural Catheter Placement Is Improved Using a Computer-Enhanced Visual Learning Program: A Randomized Controlled Trial, by Nixon et al, an e-learning tool was used to improve student proficiency in combined spinal-epidural catheter placement in obstetric patients. Participants were anesthesiology residents, divided into two groups, and evaluated during the process. After the analysis of the results, it was concluded that the participants who used the tool performed the task in less time than the control group, as well as higher overall performance in the assessments applied during the procedure. [36]

2020

In Medical interns, reflections on their training in the use of personal protective equipment was a study conducted in Australia and aimed to explore medical residents' experiences with the use of Personal Protective Equipment (PPE) and identify opportunities for improvement in education and training programs to improve occupational and patient safety. Self-experiences were analyzed, as well as a theoretical course on PPE. Subsequently, with all the information analyzed, the following results were proposed: Many trainees have not received formal training in the specific skills necessary for optimal PPE use and have developed potentially unsafe habits. Their experiences as medical trainees in clinical areas contrasted sharply with the recommended practice taught in hospital orientation and impacted their ability to culture the correct use of PPE. [37]

2021

In the article called: High value care education in general surgery residency programs: A multi-institutional needs assessment, carried out in the United States in 2021, with 181 general surgery residents, they answered an electronic survey that sought to explore the level and depth of education on conscious care about management and health costs. 44% of the participants answered that they believed that the teaching of the conscious use of resources should be taught during the residency period. Only 15% consider themselves able to lead the team based on safe patient care and good financial management of care. In the end, most participants believe that teaching safe care should be taught during residency, as well as the correct management of resources. [38]

Conclusion

Evaluating the knowledge of multi-professional residents about patient safety was a problem addressed by several authors over the ten years included in this survey. Although the subject was addressed, the methodology used in each selected article was heterogeneous, so the residents' knowledge on the subject was assessed by means of interviews, tests, scenarios, group meetings, theoretical classes, and discussions, among others. Therefore, we can conclude that there is still no guideline to direct this teaching and learning. However, even though the teaching method is not yet approached in a more effective way by residency programs, in all studies, most participants saw great importance the deepening of knowledge about patient safety.

It was noted, however, that the learning is still lacking, since in many of the studies in the pre-and post-tests/discussions, the knowledge increase curve of the residents was small, and thus, most of the participants left the meetings with little acquired knowledge.

As limitations, the low presence of multi professional residents in the papers (nurses, physical therapists, dentists and others) stands out, since the majority of the participants were medical residents. Another factor, was the lack of articles that addressed the theme exclusively and in its entirety since in several works knowledge about patient safety was one of the topics to be discussed with residents. Finally, it was seen a predominance of articles on the theme in North American health schools, since no articles of this kind were found produced in South America.

Finally, it is highlighted as evidence of the importance of addressing the topic with all residents of teaching hospitals, in addition to greater standardization of the teaching and learning process, so that residents can achieve more knowledge and can demonstrate skills on the subject, in the daily routine of providing services, so that globally they can provide care with quality and safety.

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