



SIMULATION TRAINING IN HEALTH: A FOCUS ON GERIATRICS
SIMULAÇÃO NA FORMAÇÃO EM SAÚDE: UM ENFOQUE EM GERIATRIA
ENTRENAMIENTO DE SIMULACIÓN EN SALUD: UN ENFOQUE EN GERIATRÍA

Fillipi André dos Santos Silva¹, Soraya Maria de Medeiros², Verônica Rodrigues Fonsêca Costa³, Raphael Ranieri de Oliveira Costa⁴, Marília Souto de Araújo⁵, Yanna Gomes de Sousa⁶.

ABSTRACT

Objective: to identify the types of simulation and the competencies and skills used in order to contemplate the professional practice and training in geriatrics. **Method:** an integrative review with the search of studies in databases SCOPUS, CINAHL and MEDLINE/PUBMED. **Results:** the simulation types most commonly used in geriatrics were low fidelity, high fidelity with use of default patient, computerized mannequins and role-play. The skills and competencies targeted by the simulation were of a technical nature, non-technical and behavioral, such as empathy and assessment of health status and socioeconomic weaknesses and affective. **Conclusion:** in ageing, physiological changes added to multimorbidities those limitate the life of the old person. With this, the simulation provided a better understanding about the aging process, significantly improving the knowledge and behavior of students from various undergraduate health courses. **Descriptors:** Simulation; Patient Simulation; Education; Health; Geriatrics; Teaching.

RESUMO

Objetivo: identificar os tipos de simulação e as competências e habilidades utilizadas de forma a contemplar a atuação do profissional e a formação em saúde em geriatria. **Método:** revisão integrativa com busca de estudos nas bases de dados SCOPUS, CINAHL e MEDLINE/PUBMED. **Resultados:** os tipos simulação mais utilizados em geriatria foram de baixa fidelidade, alta fidelidade com uso de paciente padrão, manequins computadorizados e role-play. As habilidades e competências objetivadas pela simulação foram de cunho técnico, não técnico e comportamental, como empatia e avaliação do estado de saúde e fragilidades socioeconômicas e afetivas. **Conclusão:** no processo de envelhecimento ocorrem alterações fisiológicas somadas às multimorbididades que causam limitações na vida do indivíduo idoso. Com isso, a simulação proporcionou um melhor entendimento sobre o processo de envelhecimento, melhorando de forma significativa o conhecimento e o comportamento dos discentes de vários cursos de graduação em saúde. **Descritores:** Simulação; Simulação de Paciente; Educação; Saúde; Geriatria; Ensino.

RESUMEN

Objetivo: identificar los tipos de simulación y las competencias y habilidades usadas para contemplar la práctica profesional y la formación en geriatría. **Método:** revisión integradora con el levantamiento de estudios en las bases de datos SCOPUS, CINAHL y MEDLINE/PUBMED. **Resultados:** los tipos de simulación más comúnmente utilizados en geriatría eran de baja fidelidad, alta fidelidad con uso de paciente predeterminado, maniqués informatizados y role-play. Las habilidades y competencias dirigidas por la simulación eran de carácter técnico, no técnico y comportamental, como la empatía y la evaluación del estado de salud y las deficiencias socioeconómicas y afectivas. **Conclusión:** en el proceso de envejecimiento cambios fisiológicos a las multimorbidities que causan limitaciones en la vida de la persona con más edad. Con esto, la simulación proporciona un mejor entendimiento acerca del proceso de envejecimiento, mejorando significativamente el conocimiento y comportamiento de los estudiantes de diversos cursos de pregrado en salud. **Descriptor:** Simulación; Simulación del Paciente; Educación; Salud; Geriatria; Enseñanza.

¹Student, Academic Degree Course in Nursing, Federal University of Rio Grande do Norte/UFRN. Natal (RN), Brazil. Email: fillipiandre@hotmail.com ORCID iD: <https://orcid.org/0000-0002-0935-5014>; ²Doctor, Graduate Program in Nursing, Federal University of Rio Grande do Norte/PPGENF/UFRN. Natal (RN), Brazil. Email: sorayamaria_ufrn@hotmail.com ORCID iD: <https://orcid.org/0000-0003-2833-9762>; ³Nurse, Member of the research group Kaleidoscope of education in nursing, Federal University of Rio Grande do Norte/PPGENF/UFRN. Natal (RN), Brasil. Email: ve99fonseca@hotmail.com ORCID iD: <https://orcid.org/0000-0002-2013-4992>; ⁴Doctor, The several Campi School of Medical Sciences of the Federal University of Rio Grande do Norte/UFRN. Natal (RN), Brazil. Email: raphaelranieri@hotmail.com ORCID iD: <https://orcid.org/0000-0002-2550-4155>; ⁵Nurse, Member of the Research Group Kaleidoscope of education in nursing, Federal University of Rio Grande do Norte/PPGENF/UFRN. Natal (RN), Brazil. Email: mariliadearaujo@yahoo.com.br ORCID iD: <https://orcid.org/0000-0001-9636-1991>; ⁶Nurse, PhD student, Graduate Program in Nursing, Federal University of Rio Grande do Norte/PPGENF/UFRN. Natal (RN), Brazil. Email: yanna_gomes@yahoo.com.br ORCID iD: <http://orcid.org/0000-0002-0830-5349>

INTRODUCTION

Among the various existing trends in the 21st century we have the predominance of population aging. In 2012, there was the sum of just over 810 million elderly people in the world, represented by 11.5% of the world population¹. Each year, a little less than 58 million people reach the age of 60, contributing to the statistics about the aging population.¹ Bringing the Brazilian context, according to the Brazilian Society of Geriatrics and Gerontology, in 2014, the elderly population in Brazil was represented by 11.34% of the population, accounting for a total of 22.9 million people in the country.²

In a situation in which the elderly population grows, and foreseeing this growth, it is approved the National Health Policy of the Elderly Person by Decree N 2,528 of 19th October, 2006³. This policy provides the priority suitability of curriculum of courses in the area of health tangent the insertion of content turned to the aging process, both in individuals how many of the people in varied levels of formal education, in addition to the inclusion of gerontology as a curriculum of courses of higher education in health.^{1,3} To meet these ideas, the Ministry of Health, in partnership with the Ministry of Education, promoted investments those have enabled the approximation of health educational institutions in the different scenarios of practices, aiming to improve quality of care. These interventions in health-related training are applied to 14 higher education courses, which are: Biology, Biomedicine, Physical Education, Nursing, Pharmacy, Physical Therapy, Speech Therapy, Medicine, Veterinary Medicine, Nutrition, Dentistry, Psychology, Social Service and Occupational Therapy.^{1,4}

In order to meet the demands of policies and ordinances for the teaching of gerontology and geriatrics in undergraduate courses in health, there is a constant demand for strategies those allow for significant contribution in quality of care.⁵ The active methodologies are appointed from among the many teaching strategies in health, which in turn places the learner at the center of the teaching-learning process.⁶ In this context, we can mention the simulation in health with among the active methodologies used in health education.⁵

With respect to the simulation, it is understood as an efficient process whose objective is to represent of a genuine reality form, promoting active learning of the academic, once there are used technologies

such as simulators.⁷ Such simulators are classified as low, medium and high fidelity used for the development of general and specific skills⁸. It is valid to highlight that these technologies do not incorporate all the meaning that the simulation features, but only part of it.⁷

Taking into consideration all aspects that aging brings to the body - as motor difficulties, psychological, in addition to the medical charges^{9,10} - and also with the concern in more qualified training of professionals and future health professionals with an enlarged view of the health of the elderly, is that the simulation in gerontology and geriatrics possesses an important contribution to the development of skills and competencies. Its importance stems of tasks that fit to health professionals, which can be considered since specific actions of the immediate plan to know do - skills - and also of behaviors that come with the knowledge, skills, abilities, attitudes and judgments, which in turn is necessary for the performance of professional activity - rules.^{11,12}

Tangent to the formation of the intellectual body of this study we formulated the following guiding question: In the context of training in health and also in directing the care of elderly person, what are the types of simulation are used in order to contemplate the work of professionals, as well as the competences and skills that are worked in simulation scenarios in geriatrics and gerontology?

OBJECTIVE

- To identify the types of simulation, as well as the competencies and skills used in order to contemplate the professional practice and training in health in the context of the geriatrics.

METHOD

It is an integrative review of the literature¹¹, the following phases: (1) identification of the research problem, (2) bibliographic search in databases; (3) evaluation of the data, (4) analysis of the data; and (5) presentation¹¹.

The search for studies was carried out in the databases of SCOPUS; Cumulative Index to Nursing and Allied Health Literature (CINAHL); and Medical Literature Analysis and Retrieval System Online (MEDLINE/PUBMED) in July 2016. The collection period of studies for the construction of the intellectual body was of five years (2012-2016) in the computer lab and library sector of the Nursing Department

of the Federal University of Rio Grande do Norte using the Portal of journals of CAPES.

The search strategy utilized was the use of descriptors in English (simulation, gerontology and geriatrics) found in the Health Sciences Descriptors (DECS) together with the Boolean operators AND and OR in the following way: Simulation AND (Gerontology OR Geriatrics).

The inclusion criteria used were complete studies available online in Portuguese, English and Spanish. The first search resulted in 409 studies; however, when applying the first filter (language, complete text and year), the number of works found was reduced to 137.

Soon after reading the titles and abstracts, we applied the second filter, the exclusion criteria: editorial staff, research projects, studies published in national and international events, official documents of governmental nature, books, theses, dissertations, articles of literature review, reflection articles, duplicate samples in the databases and studies that do not meet the objectives of this work. There were excluded 127 studies, composing the final sample with 10 studies, which are international works. Figure 1 presents a summary of the search.

Database	Raw Search	1 st Filter	2 nd Filter
MEDLINE	168	69	6
SCOPUS	147	41	1
CINAHL	94	27	3
TOTAL	409	137	10

Figure 1. Summary of the search in databases.

The studies were read in their entirety and organized in a spreadsheet with the following information: alphanumeric code, authors, database, and type of simulation, courses involved, skills and competencies. Such

studies were identified with an alphanumeric code: the year of publication and the sucedente alphabetical letter to differentiate each article published in the same year.

RESULTS

Code	Authors	Database	Course	Skills	Responsibility
A12	Yu; Chen ⁹	SCOPUS	Nursing Assistant		Patient safety List prescription drugs and in use, herb dose, frequency, therapeutic and adverse effects.
B12	Zuilen; Kaiser; Mintzer ¹²	MEDLINE	Medicine		
A13	Ross <i>et al</i> ¹⁰	CINAHL	Nursing	Empathy; Communication with patients and families.	Evaluation of the state of health of the elderly
A14	Fisher; Walke ¹⁵	MEDLINE	Medicine		
B14	Mehdi <i>et al</i> ¹⁶	MEDLINE	Specializing in geriatric medicine	Communication; Teamwork; Decision-making; resource management.	
A15	Braude <i>et al</i> ¹⁷	MEDLINE	Medicine; Nursing; Physical therapy; Occupational Therapy.	Teamwork; Communication; Decision-making.	
B15	Chen <i>et al</i> ¹⁸	MEDLINE	Medicine; Nursing	Empathy	
C15	Chen <i>et al</i> ¹⁹	MEDLINE	Pharmacy	Empathy	
A16	Darrah <i>et al</i> ²⁰	CINAHL	Nursing; Medicine; Physical therapy; Occupational Therapy; Pharmacy; Social service; Pastoral Care	Empathy	
B16	Turrentine <i>et al</i> ²¹	CINAHL	Nursing; Medicine	Clinical Skills	

Figure 2. Studies on the use of simulation in geriatrics according to code, authors, database, type of simulation, courses, ability and skills, 2012-2016.

In Figure 2 there are presented the 10 articles selected in accordance with the code used in this study, the authors according to the database in which they were found, the kind of simulation used in the studies, the courses involved, skills and competencies.

The 10 selected studies are distributed in six journals, they are: Journal of The American (3) Nursing Education Today (2), Age and Ageing (2), American Journal of Pharmaceutical Education (1), The Clinical Teacher (1) and BMJ Quality & Safet (1).

Eight courses in the area of health, including courses for technical training and specialization, were applied to the simulation methods in geriatrics, they were: nursing assistant, specialization in geriatric medicine, graduation in medicine, nursing, physical therapy, pharmacy, occupational therapy and social service.

Two studies, A15 and A16, were executed the interdisciplinary simulation involving nursing courses, medicine, physiotherapy, occupational therapy, pharmacy, social

services, pastoral care. These studies made opportune the integration of students from other undergraduate courses in health for the implementation of care directed to each profession and also of team work.

According to the qualitative analysis of the studies of the sample, it emerged three categories of use of simulators, which are explained below in Figure 3:

Type of Simulator	Item code
High-and low-fidelity mannequins	A13; A14; A15
Patient-Default	B12; A13; A14; B14; A15; B15; A16; B16
Role-play	A12; A14; B14; A15; B15; C15

Figure 3: Types of simulators used in teaching Geriatrics: patient simulator, simulated patient and role-play.

The different types of simulation explored teaching geriatrics health courses, their skills and abilities.

When analyzing the studies according to the type of simulator employed, it was found that in seven studies there were used actors in the role of patient (patient-default or simulated), three use computerized manikin of high and low fidelity (patient simulators), six studies used role-play (Figure 3). The studies A13, A14, B14 and A15 employed more one simulation method in the execution of the simulation in the teaching of geriatrics (Figure 2).

The use of patient-default was the method of simulation most used among the studies of the sample. We used this type of simulation to make an inventory of the medications (drugs, herbs, doses, frequency and effects), empathy, and communication, evaluation of the state of health of the elderly, teamwork, decision making, planning and leadership.

The use of role-play was also widely used in the studies. The objective of this method focused on patient safety and empathy, allowing academics if they put in place of an elderly person covering some limitations that are common to the advancing age, as limitations of movement and visuals.

The use of patient simulator was the method less used in accordance with the analysis of the studies of the sample. In this modality of simulation there were used simulators of low and high fidelity. It was applied in this type of simulation for the training of empathy, communication with patients and families, evaluation of the elderly regarding delusions, fall and abuse of the elderly.

DISCUSSION

After analyzing the results of the studied articles, it was observed how the human aging has increased in recent decades, making it a challenge for health professionals. Only in Taiwan, 10.7% of the total population are 65 or more, being that 8.9% of older adults in need of long-term care⁹. Since the population of the United Kingdom who is aged over 65, an increase of 15% in 1985 to 17% in 2010 and is expected to reach 23% until 2035.¹⁵ In The United States the proportion of older adults is increasing, and in 2025 almost 18% will be at least 65 or more (Chen et al). In Brazil, according to the forecasts of the Brazilian Institute of Geography and Statistics (IBGE), in 2030 the elderly population in Brazil reaches 18.6% of the Brazilian population and in 2060 this index culminate in 33.7% of the country's inhabitants.²²

This teaching methodology has been increasingly used and all medical specialties made opportune by a series of rules within the simulation, they are: low, medium to high fidelity.¹⁷ The low fidelity simulators are represented by static mannequins for training of technical skills. The average fidelity are mannequins that has respiratory and cardiac sounds and allow monitoring with electrocardiogram. The high-fidelity simulators are subdivided into patients; simulated patients are used for training of skills and competence more complex.²³

The use of simulation in health, especially in the field of geriatrics, has become a teaching tool advantageous, because it develops in the students various technical and non-technical skills with the aim to promoting the administration of a challenging complexity of resources and health care of a certain

population of patients. These skills are directed, once that some issues are not addressed adequately during the clinical practice.¹⁷ The technical skills are understood as the development of procedural skills and knowledge; and non-technical skills, as exemplified in the communication, behavioral attitudes and teamwork.²⁴ The skills addressed to the training with simulation in geriatrics are skills of manual skill, effective communication with patients and family members, decision-making, leadership, use of resources, teamwork and empathy.^{10,16-21}

To discuss the competencies, Gonçalves, Coutinho and Lobão¹¹ asserting that between the simulation and the development of skills there is a close relationship, because the benefits related to their educational potential, security, costs and results is becoming legitimized by research. Such skills enrich the knowledge in identifying, understanding and resolution of complex hardships stemming from situations that are exposed to students during their practices.¹¹ The powers those are often addressed in the simulations in geriatrics are of patient safety, care with medications and their administration and evaluation of the state of health of the elderly.^{9,12,13}

Some attributes are awakened by the simulation forward to cases presented to learners, such as creativity, curiosity, the autonomy of thought and criticism.¹² With this competence is not just achieving perfect or nearly perfect, but the redo-with the idea to advance to any events.²⁵

In this sense, it can be considered another contribution, the use of interdisciplinary simulation that is increasingly being an important strategy in education in health.²³ Kaneko et al²⁴ conducted a study of speech referred to in situ simulation involving doctors, nurses and nursing technicians whose simulation promoted the identification of errors on the part of the team in a clinical situation very much present in the realities of emergency services, Acute Myocardial Infarction. This type of simulation, the joint work of the professionals involved has provided a better technical evaluation, behavioral and operational allowing the correction of threats to human nature and operational.²⁴

Demo²⁵ talks about the collective competencies those aim at the ability of contribution from individuals. Modern theories have in their speech to the intention of favoring learners through working together. Students should move, communicate, and seek different forms of participation and

organization of their work to meet such ideas.²⁵

With advancing age, the limitations and physical difficulties, in addition to the multimorbidities may lead to prejudice and discrimination on the part of the younger generation because they consider that the elderly are different individuals with negative aspects. If the aging process is not understood in its entirety, the assistance provided will not be adequate compromising the health care to the elderly person. In this perspective, aiming to become a better understanding about the aging process, the simulation has been targeted as a form of education to undergraduate courses to deconstruct and reconstruct concepts and promote new ways of thinking.⁹

The results of study participants indicated a significant improvement in knowledge about the aging after the simulation program for elderly based on educational theories of American philosopher John Dewey, "Learn from the experience and learning by doing". It used equipment that simulates the different levels of incapacity inherent to aging in daily life such as sponge earplugs to simulate hearing impaired, pair of glasses especially to simulate visual impairment, among many others. The safety of the patient was the competence assessed in this study.⁹

In their study, Fisher and Walker¹⁵ identified that the students participating in simulated scene obtained better results over those who have not received the simulation. The topics covered in the simulation were delusions, drops, abuse of the elderly and notification of bad news. Students of Medicine felt better prepared to cope with clinical scenarios, and reported that the simulation provided important positive impact on how we thought the geriatric medicine. Students do not had extensive knowledge about the abuse the elderly person; however this issue was addressed during the interrogation and eventually generate significant knowledge about the theme addressed.¹⁵

Mehd el at¹⁶ identified that the feedback after the simulation in which the majority of the responses were related to non-technical skills. These skills were not adequately addressed in its formal theory, thus making rare this approach in the curriculum. Soon, once worked this aspect, the simulation was becoming a very valuable training modality, which could also be better leveraged with the increase in the use of feedback with video sessions and individual enlightenment.¹⁶

Braude et al,¹⁷ also identified that the majority of the answers of the tests applied in

their study were related to the non-technical skills, which were best taught in this modality of teaching. These non-technical skills were divided into four main groups: communication, clinical knowledge, knowledge of the situation and planning, and teamwork. Students of medicine, nursing, physiotherapy and occupational therapy reported that the simulation in geriatrics was a modality of valuable training for learning, because rarely these aspects were addressed in formal modality of education.¹⁷

The simulation is one of the techniques most widely used in professional training in the area of health, especially in geriatric medicine; it is an effective method to facilitate learning at all levels of education. It has been widely adopted as a teaching tool within the geriatrics.¹⁶

The simulation has been used by the aviation industry for more than 40 years to ensure the flight crew.¹⁷ In nursing has also been used for quite some time, began with the use of static mannequins for teaching psychomotor skills, later also began to use computerized mannequins for students to come closer to real situations.²⁶ The health benefits of similar technology as a way of improving the results of practice on safety and care of the patient.¹⁷

It was observed in the researched articles that students who received training based on simulation surpassed the expectations of those who received the normal education without any simulation.¹⁵ Simulation-based training allows the academics improve their skills at any time in an environment free of any risk, according to their learning needs.²⁶ In the end, these academics felt more secure and balanced by the benefits offered. However it is natural to feel a bit of anxiety and apprehension caused on the simulation environment.¹⁰

The simulators used in studies were of high-fidelity as Role-Play, Default Patient, computerized dummies, only a low fidelity. All used in teaching centers for the formation of the academics. There is always a discussion for each scenario, called debriefing, moment in which teachers and students discuss the situation staged.²⁶ This study had the purpose of knowing the types of simulations within the context of the geriatric group, as well as the competences and skills worked in health professionals' actions in relation to the health of the elderly.

It was discovered that the majority of participants in the research studied were female, a fact that can be associated to a feminine fragility, their emotions more

touched and an empathy with the elderly by remembering their relatives older. Between the categories stood to nursing, but also participated in other categories such as medicine, pharmacy, occupational therapy, physiotherapy and social service.

The skills and competencies that showed was empathy in four studies analyzed, communication with patients and families, effective communication, teamwork, decision making, planning, leadership and expertise as patient safety and assessment of the state of health of the elderly regarding delusions, fall and abuse. The professionals of several areas of health more than ever must participate actively in the care provided to the elderly.²⁷

One of the concerns in one of the studies conducted by medical students in the assessment of competences was regarding medication of the elderly regarding understanding your prescription, complete list of medications a patient, including those prescribed, herbs and prescription medicines, provide the dose for each drug, the frequency, the indication, the benefits and effects.¹⁴ In a study conducted in Brazil showed that not all medications used were prescribed by doctors, some being used for own account. Forty-eight (48%) of the elderly respondents reported making use of drugs without medical prescription. Approximately 62% claimed to have knowledge of the therapeutic indications of prescribed medications. On the routine administration, 26% reported never remember to administer the medication at the time indicated.²⁸

CONCLUSION

The simulation is one of the key points for the training of students in their professional training, especially in the context of health in the elderly, which requires very specific care and attention on the part of health professionals. In aging the patient undergoes physiological changes, psychomotor, neurological, committing all its organic function. Added to this there is a greater prevalence of chronic and acute multimorbidities that lead to hospitalization, the long-term institutions, making them increasingly dependent on their daily activities such as eating, bathing and going to the bathroom, which interferes with the more complex issues for health services and social assistance. However, health care professionals need to be prepared to improve the quality of care delivered to the elderly individual.

The surveyed studies showed that the types of simulation most used were of high fidelity as: Role-play, Standard and computerized

patient mannequins. Only a low fidelity. The skills found in the students were of empathy and communication with patients and family members, decision-making, planning, leadership, non-technical skills such as teamwork and communication and clinical skills. The skills such as: patient safety, document a complete list of medications a patient, including prescribed prescription medicines, and, for each medication provide the dose, frequency, the indication of benefits, the effects and an assessment of adherence. Assessment of the state of health of the elderly regarding delusions drops and abuse of the elderly.

It is still necessary to reflect on various teaching strategies in geriatrics and gerontology and its proper insertion in the curricular components of undergraduate and post-graduate courses in health compared to forecasts and population statistics, since they are indicators that reinforce the public policies in order to take account of the demands that by for instance will emerge over time. It is crucial that new studies are conducted in future in order to better consolidation of simulation in geriatrics, especially national studies aiming to improve health care in the elderly person. These actions can improve the quality of the formation of new professionals and consequently the quality of Health Care.

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Corresponding Address

Fillipi André dos Santos Silva

Rua Desembargador Jaime Jenner de Aquino,
96

Bairro Ponta Negra

CEP: 59090-710 – Natal (RN), Brazil