

Clinical education in nursing: development of a simulated house for the operationalization of home visits

Educação clínica em enfermagem: desenvolvimento de uma casa simulada para a operacionalização de visita domiciliar

Thiago da Silva¹ 

Aline Carla Hennemann² 

Thamires Souza Hilário³ 

Denise Greff Machado⁴ 

Adroaldo Lunardelli⁵ 

¹Corresponding author. Complexo de Ensino Superior Meridional (Porto Alegre). Rio Grande do Sul, Brazil. thipoa51@hotmail.com

²Complexo de Ensino Superior Meridional (Porto Alegre). Rio Grande do Sul, Brazil. ahennemann@yahoo.com.br

³Hospital de Clínicas de Porto Alegre (Porto Alegre). Rio Grande do Sul, Brazil. thamires.hilario@gmail.com

⁴Hospital Sírio Libanês (São Paulo). São Paulo, Brazil. denise.gmachado@siriolibanes.org.br

⁵Hospital São Lucas (Porto Alegre). Rio Grande do Sul, Brazil. adroaldolunardelli@gmail.com

ABSTRACT | OBJECTIVE: To report the construction of a simulated house to implement high-fidelity scenarios during home visits by nursing students with a view to primary health care. **METHOD:** Experience report of teachers, carried out from March 2019 to November 2020. **RESULT:** The simulated house required effort to assemble its physical infrastructure, as it has controlled acoustics, recording equipment, a semi-transparent mirror, and functional furniture. The implemented scenario deals with the care of a patient with hearing loss and who has high blood pressure. It was also used as an application for a mobile phone that helps in sign language can be considered something functional and useful. **CONCLUSION:** The presented structured scenario shows an elegant way of working home visits with students, who can exhaust their efforts in a controlled environment to expand their skills and become quality conductors when it comes to professional practice.

DESCRIPTORS: Teaching. Simulation. Learning. Primary health care. Home visit.

RESUMO | OBJETIVO: Relatar a construção de uma casa simulada para implementação de cenários de alta fidelidade na realização de visita domiciliar pelos acadêmicos de Enfermagem com vistas à atenção primária à saúde. **MÉTODO:** Relato de experiência de professores realizado no período de março de 2019 a novembro de 2020. **RESULTADO:** A casa simulada exigiu esforço na montagem de sua infraestrutura física, pois conta com acústica controlada, equipamentos para gravação, espelho semitransparente e mobiliário funcional. O cenário implementado trata de um atendimento de um paciente com deficiência auditiva e que apresenta hipertensão arterial. Foi utilizado, também, um aplicativo para telefone móvel que auxilia na linguagem de sinais pode ser considerada como algo funcional e proveitoso. **CONCLUSÃO:** O cenário estruturado apresentado mostra uma maneira elegante de trabalhar as visitas domiciliares com os estudantes, que poderão exaurir seus esforços em um ambiente controlado para dilatar suas habilidades e tornarem-se regentes de qualidade quando chegado o momento da atuação profissional.

DESCRIPTORIOS: Ensino. Simulação. Aprendizagem. Atenção primária à saúde. Visita domiciliar.

Introduction

Primary care is the internationally supported strategy as a central element and guidance to policies that enhance the national health systems, with the full approach of individuals and families, considering health as a result of life and work conditions. Among the many efforts that may be part of the primary care is home visiting (HV), which consists of attending and monitoring its users at their homes. In Brazil, HV happens to be an activity provided by the national health system (Sistema Único de Saúde - SUS), and it can be set as a potent work tool for health professionals to contextualize understanding of processes and to design preventive interventions and health promotion.¹ Professionals from many areas of expertise use HV as a tactic to fight the ailments which devastate their communities, and, from this overview, the Nursing professional performs in a highlighted way once he/she has defined high abilities in procedures regarding this context. It is necessary to consider that home care is a health intervention strategy that requires qualified professional care, for it is known that this type of care demands the mobilization of specific skills, mainly connected to interpersonal relationships, to perform with users, family members, and a multidisciplinary team, as well as autonomy, responsibility, technical and scientific knowledge on its own field.²

In order to train a health workforce that can respond to the priorities of the 21st century and meet the needs of health care, both current and future, balance and expertise in the academic graduation of the future nurses are required, enhancing the ethical and humanist issues regarding health care, decision making, communication, and leadership skills. It is suggested that the subjects studied in Nursing courses should be reformulated to focus on the qualification of professionals who perform in the model of health care, pointing out individuals in different moments of stages of life, family, and community. House visiting is known as an instrument of health care that is able

to extend the scope of these graduating students about the health needs of people, families, and community³, allowing the students to know the life and living conditions of families, the relations that are established in the home environment, the conditions of sicknesses of a given family and, consequently, the students may facilitate the planning and the directing of actions, aiming at health promotion and strengthening self-care.¹

The curriculum guidelines implemented on Nursing courses (which must be part of the routine of institutions) have the purpose of educating professionals who can contribute to the realization of the principles and guidelines from SUS and, thus, graduate enlarged-viewed professionals to the health needs of the population.⁴ It is the academy's responsibility to elaborate strategies that make the egress competent in the pertinent articulations to the successful development of the professionals in the job market. The development of liberating learning paths, which tend to withdraw from the thoughtless historical technicality and the fragmentation of knowledge, is the course it has to take on the path of the graduating student. This way, the use of the realistic simulation is a versatile methodology, enabling its use in many possible areas, mainly as a strategy of teaching and learning in primary health care.⁵

Simulation is defined as a dynamic process, engaging the creation of a hypothetical opportunity that incorporates an authentic representation of reality, facilitates active engagement (from the user), and integrates the complexities of practical and theoretical learning, allowing repetition, feedback, assessment, and thinking.⁶ The articulation of theory and practice has been pointed out as an efficient mechanism in university education, for it stimulates students in the development of becoming a professional who is mature to perform in various situations, as well as offering learning and training opportunities through thoughtful discussions about the taken event when stimulating critical thinking on students.⁷

Clinical education based on simulation is an experiential learning technique, which engages students to be placed on situations created by the instructors of attending patients to maximize learning in real situations students may come across.⁸ The use of simulation techniques allows the same learning, practice, and training opportunities to be offered to all students equitably, seen as a way of studying in which knowledge is retained for a longer period, besides being a more pleasant tactic than the regular teaching.⁹ The repetitive simulation experience improves technical abilities (both high and low complexity) and critical thinking, making the increase of clinical skills from Nursing students more evident.⁸

Understanding the importance of the role of ethical, technical, and social responsibility from the professionals of Nursing in the context of various scenarios in health care, as well as the needs demanded from the working world in the health area, applying educational strategies that culminate and point out these aspects is of supreme relevance in the training of nurses committed to life.

This article aims to report the experience of a group of professors in the construction of a simulated house, to implement high-fidelity scenarios for a simulated home visit by the students of Nursing regarding primary health care.

Methodology

Experience report from professors on constructing a simulated house and implementing a realistic high-fidelity simulation scenario for Home Visiting (HV) in primary health care.

In the reported case, the simulated scenario was the attendance of a patient with hearing loss and Systemic Arterial Hypertension (SHA) in continuous use of antihypertensive drugs.

An actor performs the role of the patient, while the students carry out the attendance as nurses.

The activity described here was performed in an environment at a high-fidelity university laboratory for simulations in Nursing, and having the opportunity to use a bold environment like this, enables other areas of the institution to share the place with, for instance, the courses of Psychology, Pharmacy, Medicine, Nutrition, Dentistry, and Physiotherapy.

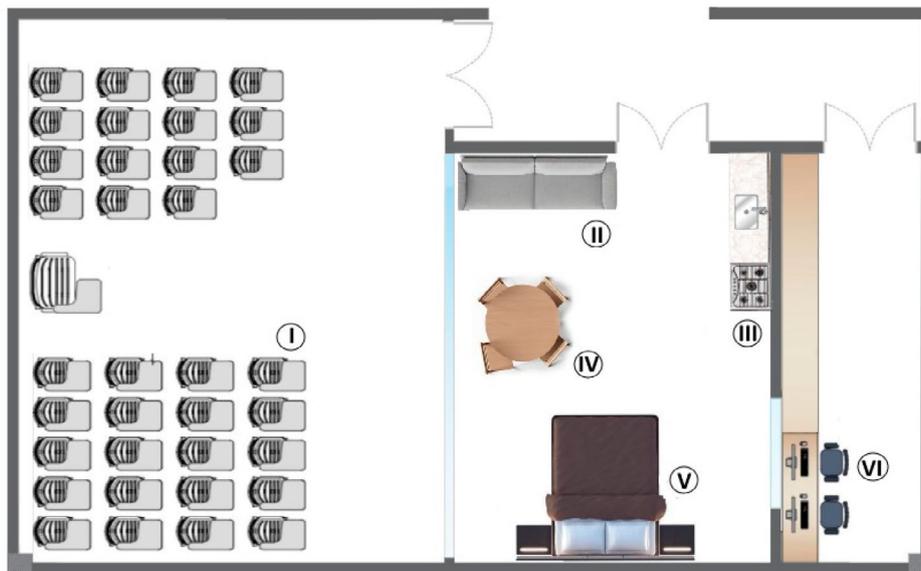
Doubtlessly, there are many possibilities of issues and situations which may be developed in this structure. Therefore, the construction of a realistic simulation scenario is supported by the development of three key elements, summarized as scope (the content which will be approached in the simulation), modality (if the simulation will happen through interactive games, dummies, or trained actors, for instance) and environment (materials and methods used to make the simulation close to real situations).¹⁰

This methodology and the construction of realistic scenarios do not necessarily demand high technology or high-performance dummies. Instead, the teacher must focus on the results to be achieved according to his/her plan, and the design of the simulation activity will take into account the specificity, measurability, and coverage of the action.

Results and discussion

The simulated house exposed here demanded an institutional economic effort to assemble its physical structure, for it has an air-conditioned environment, controlled acoustics, recording equipment (audio and video), mirrored room, and functional furniture. The architectural profile of the room is presented in Figure 1. The room was built to represent the home environment faithfully and excellently.

Figure 1. Architectural layout of the simulated house to the realization of simulated scenarios of home visiting. (I) Observation room, where viewers of the scene are sat on the chairs. In the room where the simulation occurs, the real functional furniture has (II) sofa; (III) countertop with stove and sink; (IV) dining table; and (V) double bed. An adjacent control room (VI) contains the necessary technologies to the audio and video commands



Home visiting is an approach that must be performed by the nurse who works in primary health care, provided by the Nursing teaching, according to national curriculum guidelines issued by *Ministério de Educação e Cultura* in 2001 (Brazilian Education and Culture Ministry), in which the structure of the graduation course must use different teaching and learning scenarios with a multidisciplinary team, allowing students to know and live various situations of life, organization of practices and work.

Such conditions of primacy are surely not possible to the reality of all teaching institutions; however, adaptations can be easily made so that the scenario might be built to adjust to the possibilities and wishes of each school. Therefore, the presented here becomes a flexible template, which is very adaptable to the wishes of the Nursing course, but which easily incorporates to other courses. The entire infrastructure is segmented into three rooms, each of them air-conditioned and wheelchair accessible.

The first one is a 69,3m² observation room, from where the observant students can watch the scenario comfortably sat in armrest chairs, which makes note-taking convenient. The audio is perceptible from speakers, which may have the volume up or down. This room is separated from the simulation room by a semi-transparent glass, which means the students in the observation room can perfectly see the individuals in the scenario; however, the contrary does not happen. The simulation room is 46,4m². It has real furniture (sofa, bed, dining table, sink, and stove), audio recording system (microphone) and video (camera), and – as mentioned before – sound and visual proofing. The audio and video recording equipment are fertile material to study and post-analysis of the facts, being possible to be unveiled according to the needs of recovering content.

Therefore, students who make up the activity do not allow themselves to be influenced by possible reactions coming from students in the audience once the semi-transparent glass does not enable the viewing from the adjacent rooms.

Finally, there is a controlling room with an area of 18,2m², whose main purpose is the technical management of the episode, once it is possible to manage light, sound, and the recordings in media. This room also has a semi-transparent glass that allows people to have visual contact with the scene room, yet the contrary is not possible.

Construction and applicability of the scenario

Among the issues to be considered, along with the construction of the scenario and the definition of objectives, there are abilities and skills necessary to resolve the clinical situation.

In creating the situation, the details of the clinical case are elaborated, such as place, characteristics of the patient, physical exam data, and the physiological response that will take place along the scene, according to the participants' performance. In the planning of the necessary resources, there must be identified all the material and human expedients which are essential to its adequate execution.¹¹ It is highlighted the importance that must be given to the instructional training of the actors. These are key elements to the development of a simulation.

Before realizing the activity, the students must be familiarized with the technology and equipment involved. The student must know and understand how the process works so that he/she can interact

with the systematic of the scenario, clearly identifying what must and must not be done.

The duration is expected to be one hour for each scene, divided among the briefing, simulation, and debriefing sessions. It is important to control the timing of the simulated activities by the teacher/facilitator, who will indicate the end of the event with a signal previously agreed with the students. The scene may be interrupted in the case of over-timing so that afterward, other steps of the session may be continued¹², if necessary.

The student must pay attention to the pre-set timing of the simulated activity, understanding the role of the teacher in case of interruption of the scene after its time limit. It is important to point out that the determining factor of time depends on the target audience, the goals to be achieved, and the logistics that each task demands. When building the activity, the teacher must consider carefully stipulate the timing which the students will use in each task comfortably, not allowing idle time (which could minimize the performance of the student) neither narrow breaks (which might put the student under slight pressure).

Indeed, the success of the experience is based, firstly, on the ability of the educator to produce a correct design in the making up of the activity. In this aspect, solid documentation is crucial. The step-by-step description must be well documented, and the monitoring instruments must be well structured. Figure 2 shows the used model in the applicability of the scenario.

Figure 2. Model of instrument used of construction and applicability of scenarios

Name of the scenario		Date	
Place where it will happen			
Duration		Time	
Course		Group(s)	Number of Students
Teacher			
1. Objectives of learning from the scenario			
2. Materials needed for the assembly of the scenario			
3. Organization of the environment			
4. Description of the scene – clinical case			
5. Sequence of the simulator and/or actors			
Actions of the simulator and/or actor	Actions of the student		Response from the simulator and/or actor
6. Sequence expected from the student			
Expected actions	Comments		
7. Participants of the scene			
Role/Participant			Quantity
8. Briefing of actors			
9. Briefing of students			
10. Debriefing			
Preparing the land (create a safe context to the learning process)			
Reaction (explore feelings)			
Description (clarify facts)			
Analysis (explore the various areas)			
Application/Summary (Identify main lessons)			

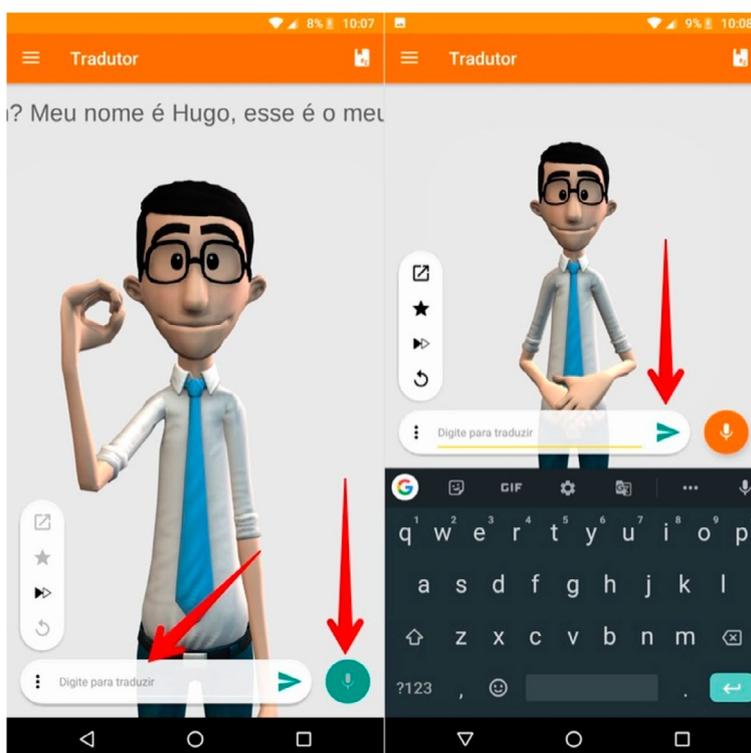
Alterations that contemplate required singularities are easily realized once they are planned with the advance in the preparation needs. The assembly and fitting of all the pieces must consider the actions (and reactions) expected from students, allowing their decision-making to lead them to contemplate the achievement of learning objectives.

As examples of learning objectives to this scenario are: nursing diagnosing related to the health of a patient with SHA; planning the assistance of global nursing to the patient in all levels of health, systematically and safely, considering the epidemiologic profile of the population and the social, ethnic, racial and cultural aspects; implementing care and actions of health education to promote quality of life, preventing sicknesses and rehabilitate the health of the ill; and guiding in relation to the correct use of medication and the participation in support groups to SHA patients.

Platform of simultaneous translation

To the increasing complexity of the scenario, a technological tool was used, the application software called *Hand Talk* (taking hands, in a free translation), which can be used during home visits to establish safe communication for patients with special hearing needs. Figure 3 shows the interface of the application software.

Figure 3. Interface of the application software Hand Talk. Source: application software Hand Talk



It is a free tool developed for smartphone operational systems which convert audios in photo texts to sign language. The application software is not only a dictionary or a grammatical translator from the Portuguese Language to the Brazilian Sign Language (*Língua Brasileira de Sinais - Libras*), once, through an animation library programmed with a set of 300 words, the software converts data into text, sound, and image which are translated to Libras. Besides being a great option for accessibility, the translator can be used by people of all ages, disabled or not, who want to learn to communicate using Libras. In 2013, the application software Hand Talk, from Alagoas in Brazil, won the United Nations (UN) prize for the best application software of social inclusion in the world.

Debriefing

Debriefing is a criterion of good practices in simulation, making the elaboration of a script with objectives, critical factors of the scenario, and questions which may direct to the discussion, to allow it to be conducted by the facilitator¹³; furthermore, this conversation simplified after the event (clinical or simulated) aims to improve the future clinical practice.

It is recommended that the debriefing is conducted in a structured way to contribute to the student's learning. The students' thinking is essential to developing professional skills and implies assimilating knowledge, abilities, and attitudes to pre-existing knowledge.

The feedback from the participant actor/actress at the end of the scene, with comments of how he/she felt in performing the role, is important to the qualification of the student.

A structure of PEARLS (Promoting Excellence And Reflective Learning in Simulation) was used in this scenario. The script of PERALS debriefing is cognitive assistance that may promote academic staff development and increase the abilities of debriefing, especially to educators who are still enhancing their experience in debriefing.¹⁴

In most teaching institutions, except some, simulation activities have been upheld by low-fidelity simulators due to ineffective academic management, shortage

of resources from schools, or its underuse; however, it is recognized that there are some exceptions, which usually derive from the creativity and art that belong to nurses, as well as the leadership and entrepreneurship of some managers and professors.¹⁵

The development of a simulated house does not necessarily submit to the economic power which may be spent on its implementation. More than this, it depends on the fine alignment between the learning objectives to be achieved and the cleverness in proposing an adequate scenario.

The clinical situation – represented here in the approach of an individual with SHA (a non-communicable chronic disease) using continuous medication – requires the technical development of attitudes which must be developed in the Nursing student, in the support and assistance to the patient, aiming at health promotion and well-being. It is also added to this already challenging scenario the degree of special needs, once the student has to develop a strategy of convincement of the user (who is hearing-impaired), to make use of a telephone application software, which eases communication and guidance, regarding the correct use of medication and his/her participation in a support group of SHA patients.

At the end of the case, a discussion carried out by the professors approaches the aspects observed by the students, enabling the simultaneous testing of multiple fields: assistance, professionalism, knowledge, and individual skills (posture and communication, for instance). Through this process, the students can identify weaknesses in their performances, optimizing the acquisition of better results in clinical practice.

The simulation with a clinical case makes room for diagnostic reasoning in Nursing, proposing interventions through the evaluation of the patient's medical records. The whole of this designed scene has a high degree of difficulty and great potential for improvement to the future nurse.

Using simulation assigned to academic qualifications allows students to develop abilities and skills required in real practice environments. It provides the increase of confidence and major engagement of the student about his/her behavior, resulting from living many

ordinary situations in assistance, which many times would be impossible in real clinical practice during graduation; moreover, it prevents users from being put in situations of risk due to the inexperience of students.¹⁶

The strategies of teaching/learning in university institutions must, therefore, break the logic of the teaching focused on the vertical way of transmitting knowledge and go beyond the traditional methodology, seeking for the use of active methods, emphasizing problem-situations, clinical case studies, group learning and interactive classes using new teaching technologies.¹⁷

The innovative approach, where the student is the key player of the actions in the classroom, must be taken as a pillar of pedagogical development in university institutions from the initial grades. As for the interdisciplinary curriculum schools (based on inclusive axes, divided into blocks of knowledge), so to those which follow the traditional division in subjects, the sooner the student is placed as part of the dynamic gear of the classroom, the more adapted he/she will be in the continuity of the process and the smaller the resistance to methodologies which avoid the passiveness of a purely expository lesson will be.¹⁸

The active simulation regards the recreation of the clinical practice with the use of new technologies in a guided way, enabling an alternative approach to reality. The variations in scenarios expose students to a range of problems, allowing the development integrated with the ability of resolution and understanding of the social-clinical context of the patient¹⁹, envisaging the skills in teamwork, the managing of crisis and leadership, the attitudes must be coordinated simultaneously, making it easy to transfer what was learned to the solution of new problems.⁹

When students are exposed to the possibility of putting into practice what they have seen described in books, they feel stimulated to build their knowledge and intensely live this dynamic experience, coming towards a more constructivist model. This interaction is a source of motivation for being considered authentic, reflecting reality, and contributing to the student's participation in his/her own learning process.

Although simulated clinical experiences do not replace the living, which may be obtained from the contact of a real sick individual, they may be an advantage in improving knowledge about the universe that surrounds practice, mainly during home visiting. Moreover, this knowledge can be potentialized when combined with the theoretical class and the simulation, even with students at the beginning of their academic graduation.²⁰

The simulation, during this experience, presents contributions to the teaching of advanced practices in Nursing to the development of skills in higher clinical handling, including leadership and teamwork skills. Besides, it contributes to the gap-filling of learning regarding the nurse's performance in primary health care focusing on HV, stimulating scientific evidence, and developing clinical reasoning.

The realistic simulation methodology allows the knowing of being/behaving of the individual, being an essential dynamic element, in a constitutive aspect of the recreated reality in the set scenarios, placing students in a condition of autonomy in decision making. It converges to Piaget's thoughts, which states that the individual acts and thinks, through the resulting objects of his/her experiences, pointing out that the appropriation of knowledge is only possible through the activities of the organisms about the object.²¹

The real situations with patients will always be essential to expose students to the complex reality of practice. The use of simulation, when well structured, represents an additional complementary modality, and it does not exclude the need for direct practicing with real patients. The direct engagement with the patient creates a bond between the professional and the user of health services, creating a complex chain of aware and unaware responses, including interpersonal skills, such as empathy and effective communication.

In this context, teaching through simulation enables a safer preparation of students to perform more effectively afterward, protecting. As a result, the health of the users of health services and avoiding mistakes. With simulation, students can practice and make fewer mistakes without putting patient or students at any risk.²²

The efficiency of the simulation method brings countless positive results to the student, who becomes the active subject of the action that must be done through developing logical and critical thinking. Furthermore, teaching through simulation can be considered an interesting tool to deal with ethical tensions and practical dilemmas once it valorizes learning based on practical experience and has been more accepted and requested by students. Still, among the positive aspects, there is a decrease in the anxiety of the future professionals, the feeling they have the necessary skills to perform their role, and reducing the gap between theory and practice.²³

It is well recorded that the simulation in Nursing teaching improves the abilities of assessment, communication, management, and psychomotor development, promoting the clinical practice and decision making through various situational real-life experiences, without compromising the safety of the patient.⁸ All of these happen in a controlled and depressurized environment.

Promoting a comfortable and dynamic study environment makes learning much more adequate, pleasant, and effective.¹⁸ The fascination occurs when the student is so into action that he/she not even realizes how much of the lesson is learned. Learning becomes fluid and spontaneous. When the moment of practice in professional life comes, the student realizes how much he/she assimilated in a pleasant and efficient model of studies. At this point, he/she becomes fulfilled to figure out the knowledge acquired, as if he/she was a drop of water finding out he/she is a blue ocean.

The use of application software that helps with *Libras* may be considered functional and useful, mainly for a faster interaction between the nurse and the patient. However, it is understood that the application software alone is not enough to the ideal understanding of deaf patients once the translation does not take into account the regionalisms and even the slang used, especially by the younger community.

Even with limitations, this technology enables the inclusion of the patient as the key player of his/her care in a more inclusive, dignified, and qualified way. In this scenario, the Nursing professional can perform as a multiplier of knowledge in hearing health.

For this, these professionals must learn, through continuous learning processes, to be prepared to assist and fully support the population's health through actions of health education.²⁴ It is highlighted here the vital need for capable Nursing professionals with experience in handling disabled patients, an old demand which remains disregarded in the preparatory schools.

The simulated experience can offer students major support to the clinical learning, directing simulated activities to specific learning needs, even in performance assessment.

In debriefing, students valorize guided reasoning, learning lessons that enhance the experience. Debriefing is a moment of extreme importance in the management of achieving objectives proposed in the simulation. Some thoughts are self-centered (I, as a student, analyze my performance in decision making), others are focused on the action (awareness and assertiveness of the action), others are aiming at the relationship (interaction between the team and the user), and finally, others are set on the creation of new actions (wish and strengthening of new attitudes).

Debriefing is central as a focusing event, for it is the moment when, often, students express disappointment with their performance, and the guidance of professors' nurtures thoughts to a safe and reliable environment.²⁵ The look inwards, the critical thinking while in action, and the team consciousness need to be revised with the learning appropriation and the belief that there can be attitudinal growth towards more accurate outcomes.

Conclusion

The new ways of learning at university institutions have been improving over time. They have been included in graduation courses, creating a suitable environment for students to have the possibility of being resolute towards a challenge, impacting the professional profile, which is in accordance with the general skills of modern health professionals.

This work shows an elaborated and planned route of structuring a simulated house to develop realistic simulations, focusing on Nursing students in an academic need to improve abilities and skills compulsorily essential in-home visiting. This last one is an important share of primary health care.

The realistic simulations are qualifications in the academy which aim to train students, enabling them to assist patients. The structured scenario, presented in this work, shows a refined way of working with home visiting – a privilege of such importance in primary health care – for the Nursing students, who may exhaust their efforts in a controlled environment, to expand their abilities and become leaders of quality when the moment of performing as nurses come.

It is highlighted in this aspect that this debate was built and tailored as a scenario of excellence to the execution of its objectives; however, it can be taken as a basis by other institutions and modified according to the singularities of each purpose and feature of each district. Studies that show success cases like this one are of extreme importance in the exchange of experience among professors, which enable teaching opportunities to come to the excellent professional graduation of the egresses.

Author contributions

Hennemann AC, Hilário TS, Machado DG, Silva T, and Lunardelli A participated in the study's design and practical elaboration. Hennemann AC and Hilário TS participated in the bibliographical reference review and the intellectual construction of the work. Machado DG and Silva T participated in the planning of work, the outline of the study, and the interpretation of data. Lunardelli A participated in the interpretation of results, writing, and critical revision of the scientific article. The authors approve the final version to be published, agree with all its aspects, and guarantee its precision and integrity.

Conflict of interests

No financial, legal, or political conflict involving third parties (government, companies or private institutions, etc.) was declared to any aspect of the submitted work (including, but not being limited to grants or loans, participation in advisory boards, design of the study, preparation of the manuscript, statistical analysis, etc.).

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