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Interdisciplinary and interinstitutional simulation and cooperation: development of nursing students competencies in disaster

Simulação e cooperação interdisciplinar e interinstitucional: desenvolvimento de competências do estudante de enfermagem em desastres

Simulación y cooperación interdisciplinaria e interinstitucional: desarrollo de competencias del estudiante de enfermería en desastres

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Abstract

Objective: to identify the importance attributed to simulated practice use in nursing undergraduate students' pedagogic actions in the field of disasters, in an interdisciplinary and interinstitutional scope in Portugal. **Methods:** a study framed in the qualitative paradigm, supported by inductive and exploratory reasoning. As a data collection technique, semi-structured interviews were applied to coordinators/directors of nursing courses at public and private schools in Portugal. **Results:** simulation methodology in the field of disasters is a teaching/learning strategy for nursing students to develop skills in this area. This type of teaching/learning methodology will have a greater advantage if carried out in partnership with organizations involved in protection and rescue operations and with an interdisciplinary scope, since it enhances prevention quality and response of all actors involved. **Final considerations and implications for practice:** considering the specific complexity and unpredictability of disaster situations, the establishment of strategic cooperation partnerships with organizations with responsibility in this field, which promotes the development of nursing students' skills and reduces the erroneous deterministic view of organizations, regarding the ability of students to integrate these actions, is fundamental.

Keywords: Disaster; Students, Nursing; Health Team, Interdisciplinary; Simulation Training.

Resumo

Objetivo: identificar a importância atribuída à utilização da prática simulada na ação pedagógica do estudante do Curso de Licenciatura em Enfermagem no domínio de desastres e no âmbito interdisciplinar e interinstitucional em Portugal. **Métodos:** estudo enquadrado no paradigma qualitativo, apoiado no raciocínio indutivo e exploratório. Como técnica de coleta de dados, recorreu-se à entrevista semiestruturada, aplicada a coordenadores/diretores dos Cursos de Licenciatura em Enfermagem de escolas públicas e privadas de Portugal. **Resultados:** a metodologia de simulação no domínio de desastres constitui uma estratégia de ensino/aprendizagem, para os estudantes de enfermagem desenvolverem competências nesse âmbito. Este tipo de metodologia de ensino/aprendizagem terá maior vantagem, se realizada em parceria com organizações que intervêm nas operações de proteção e socorro e de âmbito interdisciplinar, uma vez que potencializa a qualidade de prevenção e de resposta de todos os atores envolvidos. **Considerações finais e implicações para a prática:** face à complexidade específica e à imprevisibilidade das situações de desastres, o estabelecimento de parcerias estratégicas de cooperação com organizações com responsabilidade nesse domínio, que promova nos estudantes de enfermagem o desenvolvimento de competências e diminua a visão determinística errada das organizações, relativamente à capacidade de o estudante integrar estas ações, é fundamental.

Palavras-chave: Desastres; Estudantes de Enfermagem; Equipe Interdisciplinar de Saúde; Treinamento por Simulação.

Resumen

Objetivo: identificar la importancia atribuida al uso de la práctica simulada en la acción pedagógica del estudiante del Curso de Pregrado en Enfermería en el dominio de los desastres y en el ámbito interdisciplinario e interinstitucional en Portugal. **Métodos**: estudio enmarcado en el paradigma cualitativo, apoyado en el pensamiento inductivo y exploratorio. Como técnica de los datos, se aplicaron entrevistas semiestructuradas a los coordinadores/directores de escuelas de enfermería públicas y privadas de Portugal. **Resultados:** la metodología de simulación en el ámbito de las catástrofes es una estrategia de enseñanza/aprendizaje para que los estudiantes de enfermería desarrollen competencias en este ámbito. Este tipo de metodología de enseñanza/aprendizaje será más ventajosa si se realiza en alianza con organizaciones que intervienen en operaciones de protección y socorro y en un ámbito interdisciplinario, ya que mejora la calidad de la prevención y respuesta de todos los actores involucrados. **Consideraciones finales e implicaciones para la práctica:** dada la complejidad específica e imprevisibilidad de las situaciones de desastre, el establecimiento de alianzas estratégicas de cooperación con organizaciones con responsabilidad en este dominio, lo que promueve el desarrollo de competencias en los estudiantes de enfermería y reduce la visión determinista equivocada de las organizaciones, en cuanto a la capacidad del estudiante para integrar estas acciones, es fundamental.

Palabras clave: Desastre; Estudiantes de Enfermería; Grupo de Atención al Paciente; Entrenamiento Simulado.

INTRODUCTION

The World Health Organization and the International Council of Nurses - Framework of Disaster Nursing Competencies defines disaster as a sudden and unforeseen event caused by the action of man or nature, with effects not limited in time and space, with significant destruction of the environment, economic, social and health fabric as well as loss of life, where required resources far outweigh required capabilities.[1] Several authors[2-6] assume that, in a disaster situation, the awareness and human knowledge achieved about the event's specific complexity, by the various subjects that integrate response planning and organization, are fundamental.

It is currently argued that nurses, as an element of the interdisciplinary team, integrating the activities of preparation and response to situations of this nature, should have solid initial scientific, technical, ethical and humanistic training.[2-4] "It is the nurses who are in direct contact with the injured and displaced. Their efforts are invariably linked to gestures that consider both the psychological and spiritual dimensions as well as the physical, not forgetting the ethical principles that underlie the complex process of caring in this adversity environment".[2:104]

However, in Portugal, despite the Order of Nurses, through the General Care Nurse Competency Profile Regulation, establishing that general care nurses have the competence to respond effectively in emergency or catastrophe situations and that they demonstrate understanding of emergency for disaster situations,[3] 85% of the national higher education institutions that teach the nursing course do not have the catastrophe area included in their study plan, which opposes the pluralism and diversity of knowledge and, thus, the expansion of nurses' intervention boundaries.[2]

Nevertheless, considering that most disaster situations are unpredictable events, making it difficult to apply practical knowledge combined with theory, the use of teaching/learning strategies that allow nursing students the ability to analyze and explore these contexts, enabling the development of professional skills, is determined.[2,4,7-8]

This premise substantiates the importance of adopting simulated practice as a teaching/learning methodology, allowing to replace or expand real experiences and facilitate the understanding and management of this type of events as well as the development of nursing students' skills very close to those they could experience in real contexts.[5,8-13]

Withal, due to the complexity of simulating scenarios of this nature, capable of promoting greater critical reflection in students, opposing fragmented and disjointed actions, it is justified to clarify a way to mobilize these contents without losing the boundaries.[14] Despite the incipient evidence surrounding this theme, it is argued that an interdisciplinary cooperation can "encourage creativity, leading the various disciplinary areas that make up the protection and relief team towards more conscious and consistent decision-making, greater sharing of their own knowledge, through the analysis of problems from the various perspectives of the various professionals on the team, enabling the development of conceptual and operational skills in this domain".[12:6]

In this continuity, we aimed to identify the importance attributed to simulated practice use in nursing students' pedagogical action in the field of disasters and in the interdisciplinary and interinstitutional scope in Portugal.

METHODS

A qualitative methodological approach was chosen, supported by inductive reasoning and a rigorous description of the phenomena that have at their foundation: exploratory research. Concomitantly, the COnsolidated criteria for REporting Qualitative research (COREQ) guideline checklist were used, composed of thirty-two items, divided into three dimensions, research team and reflexivity, research design and analysis and results, allowing to increase the study reliability.[15]

An intentional sampling was used, in which the choice fell on the coordinators/directors of nursing courses of public and private schools and nurses with knowledge and practical experience in the domain of disasters in Portugal.

Coordinators/directors of nursing courses were chosen, as they are responsible for implementing the curricular objectives, continuity and management of the contents to be taught. Moreover, they have personal characteristics considered essential for obtaining rich descriptions on the subject under analysis, such as knowledge of the area under study, allowing them to provide relevant information and reflections for new knowledge production. Inclusion criteria were being a coordinator/director and having experience of at least three years in coordination, organization, operationalization and execution of curricular plans of nursing courses. There was no definition of exclusion criteria.

As for expert nurses, the choice is justified by their experience. This level of expertise makes it possible to identify answers and expose, in an intuitive way, points of view capable of producing new knowledge, because experience and being in the context determine a reflection based on evidence and a better internalization and adjustment of the skills that nurses must develop regarding their performance in these contexts. It is the knowledge that comes from experience and the capacity for critical thinking that differentiates them, allowing free decision-making in each situation, and this response is an important source of knowledge.[16] We included experts from national and international organizations with responsibility for prevention and relief actions, who have participated in at least three emergency and/or humanitarian missions in the field of disasters, in addition to being able to express themselves clearly. We excluded experts who did not complete a nursing course in Portugal.

For data collection, 35 coordinators/directors of undergraduate nursing courses at public and private schools participated in the study, out of a universe of forty, since two coordinators/directors of nursing courses did not express interest in participating, and, of three, it was not possible to obtain a response to the invitation addressed in a timely manner. As for the number of expert nurses, six participated.

From the group of participants of the coordinators/directors of nursing courses, a semi-structured interview was used in a face-to-face environment, using the recording technique. For this purpose, a script organized into two different thematic chunks was elaborated: the first, consisting of an introductory part in which the study was explained; the second, which contained the sociodemographic variables to characterize participants and four open-ended questions to be explored. The choice to use open-ended questions allowed respondents to respond using their own vocabulary, providing details that thus allow for more accurate and in-depth investigations.[17] The data collection of the group of participants of the coordinators/directors of nursing courses took place between May and September 2018.

These interviews, in addition to clarifying opinions and ideas related to the associated theme, served as the foundation for the construction of a second interview script, equally organized into two distinct thematic chunks (a first, consisting of an introductory part, and a second, with sociodemographic variables and four open-ended questions), with the intention of being debated among the group of nurses with knowledge and practical experience in the area of disasters using the focus group technique, in an online context (since some of the participants were on a humanitarian aid mission), in November 2018. They used the Skype conversation software, version five, allowing to analyze whether the coordinators/directors' perceptions were convergent or divergent from expert nurses' perceptions as well as to reconcile uniformity with diversity and, in this way, find consensus regarding the objective of the study.[18]

It should be noted that only one focus group was carried out, since, after the conclusion of the first one, the information and data obtained coincided with previous information from other sources, considering that the saturation point on the subject was reached.[19]

Data from semi-structured interviews and focus groups were transcribed and analyzed, allowing valid and replicable inferences to be made. Analysis validity and organization of data obtained from semi-structured interviews and focus groups allowed structuring the categories (coding systems) and identifying the registration units (respecting the principles of completeness and exclusivity, representativeness, homogeneity and productivity).[19-20] This coding process considered the text clippings into analysis units, the definition of counting rules and the classification and aggregation of information into symbolic or thematic categories, consolidating itself through maintenance, modification, or suppression of existing categories, allowing to obtain a system of categories that can be considered in itself as the guiding axis of the analyzes carried out.[20]

In line with the ethical principles that should guide an investigation of this nature, namely the principles recognized in the Declaration of Helsinki and the Oviedo Convention, participants were informed about the objectives, characteristics and conditions for carrying out the investigation, and the right not to participate in the study or not to answer questions that were related to the reserve core of their privacy was guaranteed. Informed consent was requested from all participants, safeguarding their anonymity as well as the secrecy and confidentiality of the information provided. This study project obtained a favorable opinion from the Ethics Committee of the *Universidade Católica Portuguesa* - Institute of Health Sciences, on March 27, 2017 (Opinion 26/2017).

RESULTS

From the data collected and the text skimming readings, it was possible to identify common elements that were grouped into two axes:

a) Teaching/learning processes in the field of disasters;

b) Intervention of general care nurses in disaster situations.

From the two axes of analysis, a system of categories emerged that were used to interpret participants' discourse, which are positioned in the different axes as follows (Chart 1).

However, of the eight emerging categories, only the structure of two categories related to the initially defined objective is presented, i.e., identify the importance attributed to simulated practice use in nursing students' pedagogical action in the field of disasters and in the interdisciplinary and interinstitutional scope.

In this continuity, from the analysis of participants' contributions, simulated practice use, as a methodology for acquiring skills in the training of nursing students, in the field of catastrophe, is unanimous:

> *The simulations* […] *are an excellent option for students to incorporate the knowledge and routinization of some decisive aspects and procedures in this area* (of disasters). (N4)
>
> *I think that through simulated practice* […]. *Simulation allows, on the one hand, the participation of students, allowing the development of skills, knowing the scope of their interventions and responsibilities, among these entities that work in articulation and, on the other hand, raising awareness* (...) *the instilling of the need to training in this specific area* […]. (N9)
>
> *Simulation* […] *in addition to developing skills, allows teamwork. We, nurses in disaster situations, will integrate multidisciplinary teams, and, in this way, these exercises allow, in addition to training, interaction, sharing of experiences and knowledge, which are assumed to be crucial for the operationalization of methods and practices between the various intervening subjects.* (N16)
>
> […] *simulation use allows, on the one hand, to place students in a certain context and make them make decisions, and, on the other hand, the analysis of these decisions that allows the creation of a conceptual framework of how to make decisions in an unexpected situation that involves different health, social and security contributions at different levels of individuals, groups and communities. Therefore, I think that resorting to simulation and simulacra can be, in fact, an invaluable help.* (N32)

Chart 1. Axes and categories.

Theme/axis	Category
Teaching/learning processes in the field of disasters	▪ Diagnose to train: nursing students' training needs in the domain of disasters.. ▪ Academy: implications in nursing students' teaching/learning process in the domain of disasters ▪ Interinstitutional and interdisciplinary cooperation: the importance in nursing students' pedagogical action in the domain of disasters. ▪ Use of simulated practice in teaching/learning in the field of disasters.
Intervention of general care nurses in a disaster situation	▪ Regulation of training content in the domain of disasters in nursing. ▪ Competency profile of general care nurses for a systematized response in a disaster situation. ▪ Reconfiguration of professional culture. ▪ Nursing students' cognitive maturity for a systematized response in the domain of disasters.

Source: research data, 2018.

Concomitantly, the same participants point out that the use of other simulation methodologies, such as role playing, or simulations by digital programs, can be complementary tools to be used in the teaching/learning process in this domain:

> […] *discussion of specific cases, "role plays", digital simulation programs (games) designed for this purpose* […]. (N5)
>
> […] *"role playing" exercises and digital simulation programs that allow the development of these skills indirectly.* (N15)
>
> *Use of case studies, role playing exercises and digital and virtual simulation programs.* (N29)
>
> […] *use of virtual reality technologies that allow students to experience situations close to reality, contributing to a greater degree of confidence and capacity to face these extreme scenarios.* (N28)

Likewise, they consider that this type of teaching/learning methodology will have greater advantage if carried out in partnership with organizations that intervene in protection and rescue operations (inter-institutional cooperation) and in an interdisciplinary scope. This process minimizes duplication of procedures, reduces competition for resources, recognizes the implications of translating knowledge into evidence, promotes continuing education, and allows for standardized practice[19], as can be gauged from the allusions of the various participants:

> […] *I believe that the solution could be to establish protocols with entities responsible for relief and rescue in order to provide these experiences.* […]. (N5)
>
> *In my view, it will be necessary to establish partnerships with civil protection entities that allow the integration of this knowledge* [...]. *Especially because these partnerships allow students to be aware of their space of action, limit of competences, within a transdisciplinary team* (N17)
>
> […] *establish partnerships with civil protection entities that, in addition to the ability to create scenarios that are close to the real conditions of an event of this nature, promote joint action and reflection among all stakeholders.* (N25)
>
> […] *as we know, in a disaster situation, it is not the nurses who, individually, have to make decisions, hence those partnerships that allow for interdisciplinarity and transdisciplinarity could be relevant moments of learning, boosting cooperation and operational articulation, allowing better risk prevention practices among the various civil protection and relief entities with different cultures and vocations.* (N32)

However, considering the complexity of these events, due to their chaotic and hostile nature, Portuguese institutions/organizations with responsibility for carrying out protection and relief activities and humanitarian aid lack some receptivity to integrate students of the first cycle of studies in their training actions, as verified by the following reports:

> […] *practice at that level […] the opportunities are very limited or practically non-existent […] most entities are not receptive […] in situations where quick interventions are required, the first cycle student is seen as an "obstacle"* […]. (N5)
>
> […] *another of the constraints will be for nursing students to develop the practical component. If, in the area of pre-hospital emergency, we are already placed immense restrictions, these more complex contexts, if they exist at all, will certainly be inhibitory.* (N6)

Even if we can integrate the theoretical component in the domain of disasters in the curricular plans, we still have the problem of practical training […] most entities are not receptive to integrating degree students […] it will not be easy at all. (N7)

DISCUSSION

Simulated practice in nursing constitutes a teaching/learning strategy that integrates several objectives, enabling the development of different skills, due to the protected context it provides, allowing exploration, innovation and practice, avoiding the risks of real situations.[21-22]

Specifically in the field of disasters, training with real simulated exercises and the use of digital simulation methodologies (allowing students to integrate immersive sensations that are perceived as natural parts of that same environment)[22] are an excellent opportunity to test the effectiveness of protocols and emergency plans for specific equipment and materials, promoting the opportunity for the various response agents to develop individual and team skills and abilities.[7] They also allow the structured analysis of the response to an event of this nature and identify points for improvement, validation and updating of prevention and response plans and decision-making. More than their practical utility, they raise awareness of the importance of a culture of prevention and safety.[8]

However, most Portuguese nursing schools do not have the necessary material, technological and human resources (experts in the field of disasters) to provide students with this reality. Therefore, strategic cooperation partnerships between schools and organizations that allow the collective and cooperative construction of knowledge and action, from an interdisciplinary perspective, in the field of disasters are important, synergistically taking advantage of the best contribution of each of the parties involved, which could translate into multiple benefits. Students are expected to know and understand the decision support systems at their disposal; which helps them in the process of analysis and exploration of these specific contexts; that develops a shared vision and a sense of purpose across subjects, being able to encourage awareness of their responsibilities as future nurses, with a tendency to horizontalize power relations between the fields involved, creating research dynamics and mechanisms for dialogue and consensus.[14]

Students, when involved in actions, even if simulated, will have to adapt the knowledge acquired to the specific situations they are faced with, a process that promotes reflection about the actions in context, thus building new knowledge and developing/consolidating skills that may be useful in the future in similar situations[21-22]. Likewise, they become aware of their strengths and weaknesses to overcome the existing gap between theory and practice and improve the body of knowledge in this domain, allowing for more concerted and effective prevention and relief actions as well as better management of available resources.[7-8]

Given the above, it appears that nursing teaching quality, its scientific activity and its differentiated care practice, in this specific domain, may benefit from the implementation of these partnerships, in the sense of a greater confluence necessary for the construction of effective collaboration and work networks between institutions with responsibility for prevention and relief in disaster situations.[2,11]

This process contributes to a better definition of thematic areas to face present and future challenges, allowing to define and build study plans that are more adequate to students' training needs, which are closer to current demands, needs and social and environmental transformations.[22]

Several studies corroborate this line of thought, arguing that interdisciplinary and interinstitutional cooperation enhances nurses' ability to communicate; collective responsibility (through reflection and exchange of knowledge, attitudes and skills); better understanding of their intervention in these contexts and, consequently, better preparation; interest and willingness to work in a team; establishing networks of relationships; integration of different perspectives or provision of conceptual tools usable by the profession in that field; cooperation in mobilizing different interpretations, in order to expand the intersection between contents as well as to enable more meaningful learning.[23-24]

On the other hand, it makes it possible to raise awareness of professors on the responsibility in the implementation of learning objectives, making it possible to oppose the fact that nursing education can be based on formalized knowledge, making it difficult to include new areas of knowledge. Professors are structuring in outlining and consolidating a common heritage for nursing and in transforming the schools themselves. These strategic cooperative partnerships between schools and organizations, with responsibility for prevention and rescue actions in disaster situations, they promote a change of attitude and mentality in professors, removing emphasis from fixed and static training paths and favoring an approximation and recognition of their importance in the face of century XXI's reality and demands.[25-28]

Likewise, there is a greater receptivity and awareness on the part of the organizations responsible for prevention and relief actions, due to the need to integrate students in the first cycle of studies in the training actions of their response teams. In Portugal, the availability of contexts in this specific domain, where learning is meaningful, with impact and quality in the teaching/learning process of undergraduate students, is a challenge. The lack of knowledge, the divergence between theory and practice, poor technical skills and the inability to solve problem situations are identified as constraints to their inclusion in training actions or training exercises.

It is in practice (even if simulated) that students participate and build personal instruments, which enable the cohesion of knowledge, new understandings, new meanings, development of new skills. Specifically in the field of disasters, only the heterogeneity of training, the integrability and diversity of contexts can underpin this design.[26-29]

It seems clear that strategic cooperation partnerships between schools and organizations, which allow the collective and cooperative construction of knowledge and action in an interdisciplinary perspective, in the field of disastersm, should be privileged, in addition to the construction of identity and students' path of nursing, future general care nurses in this field. Of the current 80,239,000 Portuguese nurses working in the national territory, 57,691 are general care nurses.[30]

It can be seen that, in the face of a catastrophe that affects the national territory, the set of coordinated actions within the scope of the various components that result from the intervention of the Portuguese National Health System (extra-hospital and hospital), in order to ensure a quick and effective, will be provided mostly by general care nurses.

FINAL CONSIDERATIONS AND IMPLICATIONS FOR PRACTICE

The collected information supports the concerns that served as the basis for this study, showing that, in the field of disasters, in addition to scientific knowledge considered a "sine qua non" condition, simulation as a teaching/learning strategy allows the recreation of environments close to reality and professional practice, enabling nursing students to develop skills as well as lay the foundations of the nursing profession in this domain.

Given the inability of nursing education institutions to develop the practical component in the field of disasters, it is essential that they establish strategic partnerships with entities with responsibility for carrying out prevention and relief activities.

We consider as limitations of the study the reduced number of investigations that focus on the analysis of this theme, which condition reflection, and the construction of a more sustained analysis framework.

We also assume the difficulty in obtaining a more representative sample of experts in the field of disasters, limiting greater external validity. However, the inferences raised from data analysis are, in our perspective, a contribution to greater awareness of the need to promote integrated active teaching/learning actions, such as simulation, which allow students to reflect, valuing the acquisition of knowledge in order to identify differentiated strategies that can contribute to sharing knowledge and provide a change in behavior, leading to reflection on practice and the acquisition of conscious behavior, enabling, through the results, implications for the five areas that structure the subject: research, practice, teaching, management and consultancy.

AUTHOR'S CONTRIBUTIONS

Study design. Paulo Alexandre Figueiredo dos Santos.

Data acquisition. Paulo Alexandre Figueiredo dos Santos.

Data analysis and interpretation of results. Paulo Alexandre Figueiredo dos Santos. Rui Carlos Negrão Batista. Verónica Rita Dias Coutinho. Isabel Cristina Mascarenhas Rabiais.

Writing and critical revision of the manuscript. Paulo Alexandre Figueiredo dos Santos. Rui Carlos Negrão Batista. Verónica Rita Dias Coutinho. Isabel Cristina Mascarenhas Rabiais.

Approval of the final version of the article. Paulo Alexandre Figueiredo dos Santos. Rui Carlos Negrão Batista. Verónica Rita Dias Coutinho. Isabel Cristina Mascarenhas Rabiais.

Responsibility for all aspects of the content and integrity of the published article. Paulo Alexandre Figueiredo dos Santos. Rui Carlos Negrão Batista. Verónica Rita Dias Coutinho. Isabel Cristina Mascarenhas Rabiais.

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