

RESEARCH ARTICLE (ORIGINAL) 

Undergraduate nursing students' competencies in disaster scenarios: from educational needs to curricula regulation

Competências dos estudantes de licenciatura em enfermagem em cenários de catástrofe: das necessidades educativas à regulamentação curricular

Competencias de los estudiantes del grado de enfermería en relación con los escenarios de catástrofes: de las necesidades educativas a la regulación curricular

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Abstract

Background: Nurses play a central role in disaster preparedness, so appropriate disaster-related education is essential. However, almost all Portuguese undergraduate nursing curricula do not address disaster situations.

Objective: To understand nursing schools' contribution to developing undergraduate students' knowledge and skills in disaster scenarios and the existing constraints on integrating this content into undergraduate nursing curricula.

Methodology: A qualitative study with methodological triangulation, including interviews and focus group, was carried out to explore the perceptions of 35 nurse teachers and 6 nurses with experience in health care provision in disaster scenarios, about integrating disaster-related content into nursing curricula.

Results: The study reveals that disaster management and preparedness should be integrated into undergraduate nursing education to guarantee the effective development and more objective regulation of students' skills in this area.

Conclusion: Portuguese nursing schools need to promote and develop undergraduate training in disaster preparedness and a more inclusive and objective regulation of this area.

Keywords: students, nursing; natural disasters; competency-based education; education, nursing

Resumo

Enquadramento: Os enfermeiros assumem uma responsabilidade determinante na resposta a situações de catástrofe, nesta continuidade torna-se imperativo que recebam formação adequada neste domínio. No entanto, a maioria dos cursos de licenciatura em enfermagem em Portugal não inclui conteúdos no domínio da catástrofe.

Objetivo: Este estudo pretende compreender o contributo das escolas de enfermagem para o desenvolvimento dos conhecimentos e das competências dos estudantes de licenciatura no domínio da catástrofe e os obstáculos que se colocam à integração destes conteúdos nos planos curriculares da licenciatura em enfermagem.

Metodologia: Estudo qualitativo com recurso à triangulação metodológica, através de entrevistas e grupo focal, com o objetivo de explorar as perceções de 35 professores de enfermagem e 6 enfermeiros com experiência na prestação de cuidados de saúde em situações de catástrofe acerca da introdução de conteúdos neste domínio nos planos.

Resultados: O estudo revela que a gestão e preparação para situações de catástrofe deve ser integrada no 1º ciclo em enfermagem de modo a garantir o desenvolvimento efetivo e a regulamentação mais objetiva das competências dos estudantes neste domínio.

Conclusão: As escolas de enfermagem portuguesas precisam de promover e desenvolver a formação na resposta em situações de catástrofe em enfermagem e uma regulamentação mais inclusiva e objetiva desta área.

Palavras-chave: estudantes de enfermagem; desastres naturais; educação baseada em competências; educação em enfermagem

Marco contextual: Los enfermeros desempeñan un papel fundamental en la preparación para las catástrofes y, por tanto, es obligatorio impartir una formación adecuada en este ámbito. Sin embargo, casi todos los planes de estudio de enfermería portugueses no integran contenidos relacionados con las catástrofes.

Objetivo: El objetivo de este estudio fue comprender la contribución de las escuelas de enfermería al desarrollo de los conocimientos y las habilidades de los estudiantes de grado en relación con las catástrofes y las limitaciones existentes en la integración de estos contenidos en los planes de estudio del grado de enfermería.

Metodología: Estudio cualitativo, que utiliza la triangulación metodológica, como entrevistas y grupos focales, para explorar las percepciones de 35 educadores de enfermería y 6 profesionales de la enfermería, con experiencia en servicios de atención sanitaria durante catástrofes, sobre esto en nuestros planes curriculares.

Resultados: Los hallazgos revelan que la gestión y la preparación ante las catástrofes deben integrarse en la formación de los estudiantes de enfermería y, por tanto, garantizar un desarrollo eficaz de sus competencias en este campo y una regulación más orientada a las competencias.

Conclusión: Las escuelas de enfermería portuguesas necesitan aumentar la formación de los estudiantes de enfermería en relación con las catástrofes, así como una regulación más inclusiva y objetiva en relación con las mismas.

Palabras clave: estudiantes de enfermería; desastres naturales; educación basada en competencias; educación en enfermería



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Introduction

Nursing education implies an interactive learning process involving experiences and attitudes that promote the development and improvement of knowledge and skills. This process is crucial for effectively dealing with an increasingly complex, differentiated, and demanding nursing practice. Despite all the advancements in nursing curricula in the last few years, some areas of knowledge are still ill-defined and need to be explored further. Disaster-related nursing training is still underdeveloped and often excluded from most Portuguese nursing curricula. Training in disaster preparedness and management is an urgent need and should be understood as a multidimensional concern (Achora & Kamanyire, 2016). Nursing undergraduate education should develop students' knowledge and preparedness, considering the fundamental values and principles of nursing care in this area. It should be noted that, in disaster scenarios, nurses are in direct contact with the injured victims, and their intervention is intrinsically related to the management of physical, psychological, social, and spiritual needs in these complex and adverse scenarios (World Health Organization [WHO] & International Council of Nurses [ICN], 2009).

The United Nations International Strategy for Disaster Reduction - Terminology on Disaster Risk Reduction (2009, p. 9) defines a disaster as “a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impact, which exceeds the ability of the affected community or society to cope with its own resources”. Despite the existence of multiple definitions of disaster, they all address the concept of widespread destruction of the environment, economy, and loss of human lives beyond any individual or community's ability to respond using their resources (WHO & ICN, 2009). Therefore, this study explores the contribution of nursing schools in developing undergraduate students' knowledge and skills in disaster preparedness and the existing constraints on integrating this subject into undergraduate nursing curricula.

Background

Throughout its history, Portugal has faced several disasters, mostly resulting from natural events, from the Lisbon earthquakes of 26 January 1531 and 1 November 1755 (which destroyed the city and accounted for more than one hundred thousand deaths) to hydrological phenomena, wildfires, and armed conflicts that led to tremendous material damages and the loss of many human lives. A key element of disaster preparedness and management is providing disaster-related education. Nursing students' knowledge and skills are grounded on critical thinking and clinical experience. As future nurses, they should possess logical reasoning to develop their knowledge and become strategic leaders. However, it is not possible to replicate

disaster situations, thus hindering hands-on, active learning, care planning, priority-setting, and clinical judgment skill development, which facilitate critical reasoning and thinking in disaster scenarios and their ethical, diagnostic, and therapeutic dimensions. Given the above, teaching in disaster preparedness is not an easy task.

Nonetheless, nursing practice in disaster situations based on intuition or routine without a theoretical framework in this area is unacceptable and goes against the development of nursing and current nursing trends (Achora & Kamanyire, 2016). The WHO and ICN Framework of Disaster Nursing Competencies, published in 2009, highlighted that, despite the unpredictability, uncertainty, ambiguity, and adversities that characterize disaster scenarios, nurses should develop skills that allow them to act responsibly and efficiently in such situations. However, several studies outline that very few nursing schools globally include disaster-related content in their curricula (Achora & Kamanyire, 2016; Rafferty-Semon et al., 2017).

In Portugal, the Regulation of the General Care Nurse Competencies Profile of the *Ordem dos Enfermeiros* (the Portuguese Nursing and Midwifery Regulator) states that nurses are able to “respond effectively in emergency or disaster situations,” and “demonstrate the ability to understand the emergency plans created for disaster scenarios” (Regulamento n.º 190/2015 da Ordem dos Enfermeiros, 2015, pp. 10087-10090). However, most Portuguese nursing undergraduate curricula do not integrate disaster-related content. General care nurse skill requirements in these situations are only broadly defined. Portuguese nursing schools have pedagogical and scientific autonomy (Lei n.º 62/2007 da Assembleia da República, 2007, artigo 11) to define their curricula and the ultimate responsibility to implement and develop a set of knowledge and skills in disaster preparedness and management for the training of nursing students aimed at an effective nursing intervention in these scenarios (Siemon et al., 2019). Rafferty-Semon et al. (2017) emphasized that this approach contributes to nursing students' development of disaster preparedness skills and to evidence-based nursing research in this area.

Research questions

What is nursing schools' contribution to developing undergraduate students' knowledge and skills in disaster preparedness?

What is the participants' opinion on their school's nursing curricula's ability to provide undergraduate students with the necessary knowledge and skills to respond effectively and efficiently in disaster situations?

What skills defined by the Tuning Educational Structures in Europe — Project Phase 1 (2003) are essential for nurses to develop a competent performance in disaster situations?

What are the existing constraints (academic and/or professional) on integrating disaster-related content into nursing curricula?

Methodology

The study was conducted in 35 nursing schools located in mainland Portugal and the Madeira and Azores archipelagos. The data were collected between May and November 2017. Concerning the study design, a qualitative study was carried out using an inductive approach to rigorously explore the phenomenon under study. The exploratory method was used to obtain a critical insight of the social reality rather than a mere description of it, allowing for the transformation of implicit forms of knowledge into explicit ones capable of determining the truth through discourse and/or analytical knowledge (Leavy, 2018). The triangulation strategy was used to support the findings by analyzing the phenomenon from multiple perspectives and increasing the authors' knowledge on the topic, thus allowing the emerging of a wide range of new points of view (Leavy, 2018).

First, to understand if the nursing schools' curricula allowed undergraduate nursing students to develop the necessary skills for an effective and efficient performance in disaster situations, the content of all 40 nationwide undergraduate nursing curricula, available at the schools' official websites, was analyzed (including mandatory and optional course units).

Of the 40 curricula, 85% did not address the topic of disaster preparedness and management, 7.5% integrated it as a mandatory subject, and 7.5% as an optional subject. Optional course units are taught if there is a minimum number of enrolled students or if a nurse teacher with experience in this area is available. Thus, it can be concluded that disaster-related education is incipient and has low visibility in undergraduate nursing curricula currently available in Portuguese nursing schools.

It is worth mentioning that the designation of some of the course units made it difficult to understand whether disaster preparedness and management were an integrated subject. To ascertain its inclusion/exclusion, the content of the curricula was verified during the semi-structured interviews held with the presidents of the scientific-technical boards or the coordinators/directors of the undergraduate nursing course of each school.

The interview script was organized into three steps. The first was to briefly introduce the lead author and explain the research aim. The second step was related to the participants' sociodemographic characterization. The participants were presidents of scientific-technical boards or coordinators/directors of undergraduate nursing courses and nurses with experience in disaster preparedness

and management. The participants were asked to answer four open-ended questions. The third step consisted of a *Likert*-type questionnaire organized into five categories. Considering the core competencies defined by the Tuning Educational Structures in Europe – Project Phase 1 (2003), the categories aimed to measure participants' perceptions of the necessary skills to promote an effective and efficient nursing performance in disaster preparedness and management.

Participants were selected based on certain personal characteristics considered essential to gather the required information, namely the ability to reflect on the given topic. The study participants are primarily responsible for operationalizing learning objectives and aligning the curricula with the nursing core competencies.

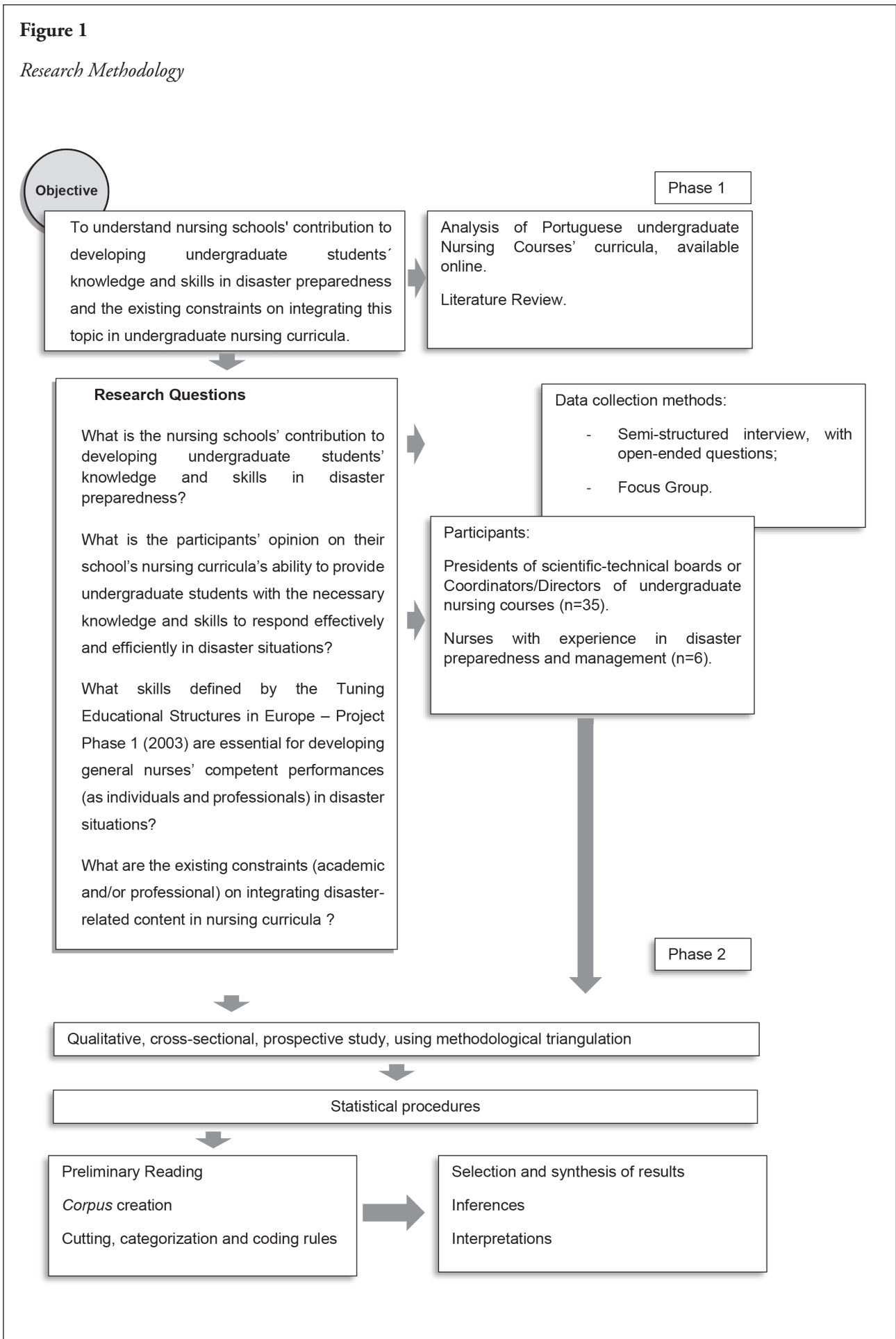
A focus group was used to determine whether the points of view of the presidents of the scientific-technical boards or the coordinators/directors of undergraduate nursing courses were in line or not with the perceptions of the nurses with experience in disaster preparedness and management. The participants' experience in disaster scenarios allowed for a deeper reflection and a better internalization of the knowledge and skills that nursing students, future nurses, must acquire and contributed with innovative points of view. Several interviews were conducted over Skype, version 5.

In both processes, field notes based on the COnsolidated criteria for REporting Qualitative research (COREQ) Checklist were taken to understand further this phenomenon. Most of the semi-structured interviews lasted on average 30 minutes, and the focus group 120 minutes.

The IBM SPSS Statistics software, version 25, was used to perform the descriptive analysis of the sociodemographic and professional characteristics of the study participants. A content analysis was carried out on the collected data, ensuring the reliability and validity of interpretive inferences and interpretations. The data analysis, validation, and organization were based on the categorization (coding systems) and identification of the registration units, considering Bardin's principles of exhaustiveness and exclusivity, representativeness, homogeneity, and productivity (2010). After the interviews were transcribed and coded (with the letter "I" for interviewees, followed by the order number in which they were carried out), the transcripts were given to the participants to make corrections and provide further comments. The participants' ongoing consent was asked to use quotes. Figure 1 presents the study design used to answer the research questions.

Figure 1

Research Methodology



From the initial group of 40 nursing schools, 35 participated in this study, two expressed no interest in participating, and three did not reply to the invitation in due time. The Ethics Committee of the Universidade Católica Portuguesa approved this study. The participants were informed about the study's objective and assured about the anonymity of the data collected and their right not to answer any question or to withdraw from the study at any time.

Results

Data analysis and preliminary readings allowed identifying common elements, which were grouped into two broad domains: Nurses' educational needs for developing disaster-related skills and factors influencing the development of disaster-related nursing competencies.

Regarding the first domain, the objective was to identify indicators of the dominant trends in the participants' statements regarding the importance and need to integrate disaster-related training into undergraduate nursing curricula, as well as strategies to increase students' knowledge in this area and the importance of a transdisciplinary educational approach.

The analysis of the second domain focused on the importance of a more objective regulation of disaster-related nursing core competencies, the framework of essential skills for the development of nursing students' adequate performance in disaster scenarios as future nurses, other academic and/or professional constraints on integrating disaster-related content into nursing curricula and assessing if undergraduate nursing students have the cognitive maturity to internalize knowledge about disaster preparedness and management. Table 1 presents the different emerging categories from the two domains.

Table 1

Domains and coding categories

Domain	Categories
Nurses' educational needs for developing disaster-related skills	<ul style="list-style-type: none"> • Importance and need to integrate disaster-related training into undergraduate nursing curricula; • Strategies to increase undergraduate students' knowledge about disaster preparedness and management; • Importance of a transdisciplinary educational approach in disaster preparedness and management.
Factors influencing the development of disaster nursing competencies	<ul style="list-style-type: none"> • More objective and comprehensive regulation of disaster-related nursing core competencies; • Framework of essential nursing skills for adequate performance in disaster situations; • Students' cognitive maturity for internalizing knowledge about disaster preparedness and management.

Despite all these emerging categories, and following the initial objective, this paper focuses on two categories: Strategies to increase undergraduate students' knowledge about disaster preparedness and management and more objective and comprehensive regulation of disaster-related nursing core competencies. These categories capture the essence of the phenomenon under study and can be considered guiding axes to respond to the outlined objectives of this study.

Regarding strategies to increase undergraduate students' knowledge about disaster preparedness and management, the participants reported the importance of including this topic in nursing curricula, thus allowing the development of undergraduate students' knowledge and skills in this area:

Disaster-related education is crucial because it enables knowledge development and allows the nursing student - future nurse - to become familiarized with, reflect upon, and apply this knowledge, as well as act responsibly within a multiprofessional team in such complex and unexpected contexts. (I6)

"Disaster-related education is extremely important,... it allows students to intervene effectively" (I7); "It [disaster-related education] is fundamental since it allows defining the objectives and the way of organizing and programming the relevant content to be addressed in the field of disaster situations" (I1); "This is certainly an emerging issue that needs to be addressed in nursing education. It deserves attention, but without neglecting the foundations and the essence of what it means to be a nurse" (I13); "Disaster-related education is undoubtedly important because it enables students to acquire basic knowledge and recognize the limits of their skills as nurses" (I35).

The second category, More objective and comprehensive regulation of disaster-related nursing core competencies, allowed the identification of the structural content to be integrated into nursing curricula: "there should be guidelines on the disaster management knowledge and skills to be integrated into undergraduate nursing curricula," (I7); disaster-related education should be regulated to ensure the standardization of the skills and knowl-

edge developed by nursing schools. The ambiguity of the content usually taught and the consequent differences in its interpretation can become obstacles to integrating this subject into undergraduate nursing curricula. (I16)

“The inclusion in nursing undergraduate curricula of disaster-related content that allows the nurse to act more efficiently in these scenarios is crucial” (I20).

Note that it is very easy to outline learning content in the contexts of Intensive Care or Palliative Care as the topics to be taught, what needs to be transmitted to the student, are somehow well supported and defined. In the area of disaster scenarios, it is not so simple... making it difficult to integrate it into the undergraduate nursing curricula. (I35)

Discussion

The study participants report that scientific knowledge is the basis from which nurses develop their decision-making abilities and affirm their value when responding to a disaster situation.

The participants' points of view suggest that nursing students need to have a solid, integrated, and non-fragmented disaster-related education that should clarify the type of service nursing offers in this area, thus avoiding confusion regarding the nurse's role and recognizing and valuing the unique contribution that nursing brings into the field of disaster situations. The understanding of nursing as an autonomous profession involves the comprehensive definition of the core professional knowledge and the creation, distinction, delimitation, and specification of its own space among other disciplines. As an autonomous profession with its particular role, namely in the field of disaster situations, nursing will not be a recognized and valued profession unless it defines its own body of knowledge and skills, specifying its standards of practice, and thus contributing with its unique skillset and care philosophy to the collective pool in these contexts.

However, the development of specific knowledge in this field is not linear. Disaster preparedness and management, given its transdisciplinary nature, require a deeper and unlimited interrelationship with other disciplines, urging the establishment of interconnections between the different sciences and their respective processes in its approach and management (Murray et al., 2019). Lourenço and Amaro (2018) point out that disaster-related knowledge and management are complex and that the limits between the disciplines that integrate these situations are tenuous. Thus, a transdisciplinary comprehensive educational model in disaster management based on multiple perspectives is needed to allow for a deeper understanding, harmonize the different disciplines' viewpoints and knowledge, and focus not just on the collaboration between these disciplines. Murray et al. (2019) state that aggregating the multiple perspectives of knowledge regarding this phenomenon and creating innovative means will generate holistic and transformative solutions. On the contrary, a monodisciplinary approach will be simplistic and insufficient in

dealing with the numerous difficulties raised by a disaster. Therefore, nursing students' disaster-related education requires a broader approach due to its complexity and the diversity of variables present. In this sense, nursing schools need to offer different disciplinary perspectives on this subject that can clearly and objectively help understand and retain information, distinctive operational methods, and content. This way, nursing schools should design their disaster-related curricular plans according to the required knowledge and skills, in a more comprehensive conceptual logic, and privileging an approach that integrates the perspectives of multiple disciplines (transdisciplinary perspective). For example, before 11 September 2001, few nursing schools had formal training in disaster relief in the United States of America. After this event, most nursing schools recognized the need to integrate disaster-related training into their undergraduate nursing curricula. As a result, the nursing workforce is currently better prepared to respond when disaster strikes (Littleton-Kearney & Slepski-Nash, 2008).

This example supports the importance of developing formal collaborations between nursing schools and other stakeholders in disaster relief management, allowing their influence to define better disaster-related educational standards and content and the design of nursing programs in this area.

On the other hand, there is the need for a more objective regulatory body. The *Ordem dos Enfermeiros* (Portuguese Nursing and Midwifery Regulator) states that “the regulation of professional nursing practice is the guarantee of its development, allowing for the safeguard of nurses' rights and of the specific rules that govern the profession, thus enabling the provision of quality nursing care to citizens” (Regulamento n.º 555/2017 da Ordem dos Enfermeiros, 2017, p. 23633).

However, the definition of nurses' disaster-related competencies was not a consensual process in Portugal (Ordem dos Enfermeiros, 2011). Concerning the framework of nursing practice competencies (specified in *Regulamento do Exercício Profissional do Enfermeiro*, REPE) in disaster preparedness, the *Ordem dos Enfermeiros* establishes that nurses are able to “respond effectively in emergency or disaster situations” and also that they “demonstrate the understanding of emergency plans for disaster situations” (Regulamento n.º. 190/2015 da Ordem dos Enfermeiros, 2015, pp. 10087-10090). However, in practice, these competencies are too broad. They do not allow nurses to differentiate and define their disciplinary paths or develop research trajectories as other disciplines in this field.

A more inclusive and objective regulation of the Portuguese nurses' disaster-related competencies is essential to define better educational program standards, influence the schools' involvement and design of nursing curricula to develop the required competencies, and guarantee quality learning and better learning assessments.

As Nunes (2016, pp. 16-17) points out, this process is crucial for framing ways of action and, thus, achieving scientific and technical autonomy in clinical practice, education, research, management, and consultancy. Nunes also states that autonomy reaches its highest point when

nurses have the freedom to make discretionary and binding decisions consistent with their professional conduct - hence the need of autonomy for the establishment of standards of practice. Moreover, Amendoeira et al. (2003, p. 39) also claim that “it is clearly important to know the... domains and structures that act as horizons, expectations, and that illustrate specific ways of thinking about the phenomenon that, in this case, is clarifying the structure of the discipline. An understanding of this structure is essential for ‘teaching’ and ‘learning’ nursing.”

Although the participants recognized that nursing schools have scientific and pedagogical autonomy (Lei n.º 108/1988 da Assembleia da República, 1988), they concluded that the *Ordem dos Enfermeiros* should be capable of regulating nurses’ competencies in disaster situations more objectively. The *Ordem dos Enfermeiros* should regulate the professional nursing practice and define rules and competency levels, building the basis for Portuguese nursing schools, and ultimately nurse teachers, since they are the ones who elaborate the curricular plans, to develop a competency-based curriculum that integrates disaster preparedness and management, in alignment with the WHO Nurse Educator Core Competencies (2016, p. 7) which state that “the competencies are intended to help guide the educational preparation of nurse; ensure educational quality and accountability; and, ultimately, contribute to improving the provision of nursing care and outcomes of health services”.

The limitations of this study include the qualitative approach and its inherent constraints. Even though the authors made all possible efforts to ensure rigor in qualitative research, some of the authors’ level of knowledge on the topic may inadvertently introduce personal bias in the interpretation of data or privilege one piece of data over another. The lack of human interaction in online focus groups may also be a limitation of the study since online participation hinders the detection of non-verbal cues and causes the loss of interpersonal exchanges. Finally, this study is the first in Portugal to explore the need to integrate disaster-related training into current undergraduate nursing curricula, so further research is needed to understand better other underlying barriers.

Conclusion

In Portugal, current nursing educational practices remain hermetic and rigidly structured. Nursing schools should provide students with a more diversified education, promoting innovation, enhancing knowledge in diverse fields, and improving the quality of nursing education. In particular, the subject of disaster preparedness is virtually absent from most Portuguese undergraduate nursing curricula. There are no specific and objective criteria regarding the necessary nursing disaster-related competencies that nursing students should develop, and that would promote a clearer and more solid definition of core skills, and the systematization of procedures and knowledge in this area. This set of core skills will contribute to the better establishment of nursing education and practice standards

in disaster scenarios, thus influencing the development of nursing curricula and student assessment requirements and learning outcomes. Therefore, nursing schools must integrate disaster-related content into their undergraduate programs for preparing nurses capable of intervening effectively and efficiently in disaster situations. Guidelines for curricula development are crucial and should focus on promoting intersectoral collaboration, harmonizing Portuguese nursing curricula in this area, and developing mechanisms for monitoring the implementation and sustainability of these educational programs.

Author contributions

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