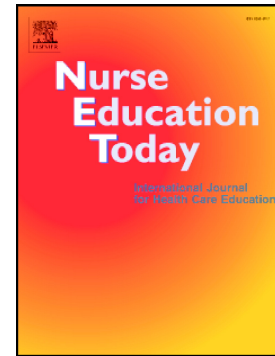


Journal Pre-proof

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PII: S0260-6917(19)31557-6

DOI: <https://doi.org/10.1016/j.nedt.2020.104442>

Reference: YNEDT 104442

To appear in: *Nurse Education Today*

Received date: 12 October 2019

Accepted date: 14 April 2020

Please cite this article as: N. Ruiz-Pellón, C. Sarabia-Cobo, F. Amo-Setién, et al., Experiences of nursing students participating in end-of-life education programs: A systematic review and qualitative metasynthesis, *Nurse Education Today* (2018), <https://doi.org/10.1016/j.nedt.2020.104442>

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EXPERIENCES OF NURSING STUDENTS PARTICIPATING IN END-OF-LIFE EDUCATION PROGRAMS: A SYSTEMATIC REVIEW AND QUALITATIVE METASYNTHESIS

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Funding: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Abstract

Objective: The aim of this review was to explore the experiences of nursing students participating in end-of-life education programs-

Design: A systematic review

Data sources: Exhaustive literature searches were performed using seven electronic databases: Medline, Scopus, Web of Science, CINAHL Plus, Dialnet Plus, Eric and Cuiden Plus.

Review methods: In total, 6572 studies published from 2008 until 2018 were examined. The Critical Appraisal Skills Program was used to assess the quality of the studies included in the review. The findings were synthesized using meta-aggregation.

Results: Seventeen studies were included in this systematic review, representing a sample of 606 nursing students. Simulation methods were most common among the educational programs analyzed. The analysis of qualitative data allowed us to identify 260 illustrations which were grouped into 14 categories and three themes: feelings and emotions during the performance of the pedagogical activity, end-of-life education among nursing students and competencies acquired on death and end-of-life. The most highlighted communication skills were learning to listen and building confidence to speak with the patient, family and the general public.

Conclusions End-of-life programs generally helped students acquire communication skills, learn concepts and improve the administration of this type of care. In addition, they perceived the experience as an opportunity to learn more about oneself, gain trust and support critical thinking. Nonetheless, the evidence available in this field is limited due to the small number of studies, plus the limited data reported. Thus, further studies on this subject are necessary.

Key words: Terminal care, nursing students, palliative care, social skills, systematic review.

1. Introduction

The need to provide end-of-life (EoL) care has increased over recent decades due to population ageing, together with a greater incidence of chronic and degenerative diseases, which often require palliative care. According to the World Health Organization (1), approximately 40 million people worldwide require palliative care. Furthermore, 78% of this population live in countries with low or medium income.

Palliative care is an interprofessional discipline which seeks to improve the quality of life of patients and family members who must face the problems associated with life-threatening illnesses or via the assessment and treatment of pain and biopsychosocial problems (1). These data highlight the relevance and importance of the role that health professionals play at the EoL stage of patient care.

The role of nurses in EoL is particularly highlighted as they are, possibly, the health professionals who spend the most time with the patient and their families (2). This implies that the nurse must be equipped to face all the associated emotions and feelings (most of which are negative) (3,4), having to resolve all fears, doubts and convictions that the patient and family members may have regarding death while, at the same time, providing the patient with competent and compassionate care, without letting their own attitudes and beliefs concerning death interfere with their provision of care.

The nurse is not exempt from emotions, attitudes and feelings generated by death, the process of dying and, consequently, the care for the patient at the EoL stage (5). Several studies (2,3,6) have shown that these professionals have negative feelings towards death, such as fear, anxiety, sadness, uncertainty and a poor ability to face death, which is related to a perceived lack of knowledge and being ill prepared to face the EoL of a patient (3,7).

All these reactions and perceptions can directly affect the quality of the care task (4). For this reason, nursing professionals need preparation to face death and administer EoL care (3,5,8).

These negative feelings towards death and perceptions of reduced self-efficacy and confidence in EoL care, are also experienced by nursing students (9,10) who have expressed the necessity of receiving training to improve the care they provide to these patients as well as reduce their own levels of fear and anxiety (7,11–14).

In response to this, organizations and associations for palliative care in developed countries have, for many years, made recommendations and established competencies regarding the same, as well as offering education on EoL (15,16).

Many studies have researched the impact that these educational programs have for the students and health science professionals (17–21). However, in order to identify the areas of progress in these activities, most of these studies evaluate the impact of learning using quantitative techniques. To the best of our knowledge, no systematic review exists (SR) that integrates qualitative studies based on the experience of nursing students after their participation in an EoL education program.

2. Study aim and research questions

The research questions used in this study, based on the meta-aggregation of qualitative data, were aimed at getting to know the experiences of undergraduate nursing students after participating in educational programs for EoL and analyzing their effectiveness for improving communications skills regarding facing death and the process of dying. Thus, this study attempted to respond to the following questions: (a) what is the general opinion that students have after participating in these education programs? (b) what were the most common characteristics of the educational programs? (c) what

recommendations for future educational projects can be derived by the studies analyzed? (d) what deficiencies were detected in the selected studies?

3. Method

3.1. Search strategy

A search was conducted in seven academic health sciences data bases (Medline, Scopus, Web of Science, CINAHL Plus, Dialnet Plus, Eric and Cuiden Plus).

The Boolean operators "AND" and "OR" were used to combine the search terms which, in some cases, were truncated to generate the maximal number of results (Annex 1). Potentially relevant articles were also identified through the hand-searching of references cited in the selected studies. The literature search and study selection began on November 15, 2018 and was completed on March 3, 2019.

3.2. Inclusion and exclusion criteria

The inclusion criteria of the selected works were: (a) studies focused on a pedagogical activity destined at providing the student with communicational skills or behaviors to face palliative care, EoL, death or patient grief; (b) educational programs destined mainly at undergraduate nursing students; (c) articles published over the previous 10 years (2008-2018) (d) qualitative studies or mixed design studies (e) studies integrating findings, including verbatim quotations from research participants.

3.3. Search findings

The total number of records found via the initial database search was 6572 articles. The flow diagram (Figure 1) displays the selection process.

[***Please insert Figure 1 about here***]

Seventeen studies (12 qualitative and five mixed method designs) were selected. The main characteristics of the papers are shown in Table 1.

[***Please insert Table 1 about here***]

3.4. Assessment of quality

The quality of the studies included was evaluated using The Critical Appraisal Skills Program (CASPe) (22).

3.5 Kirkpatrick level of assessment

The Kirkpatrick model (23,24) was used to establish, for each of the reviewed articles, the level of training attained by nursing students. This model consists of four levels: *reaction, learning, behavior and results*.

3.6. Data extraction and synthesis

Prior to the literature search, a protocol was designed and registered in PROSPERO (pending confirmation) which was reviewed by two experts and is available upon request.

Two researchers (R.N. and O.C.) independently coded the primary studies and at a later stage, the level of inter-coder agreement was estimated. The Cohen's Kappa coefficient was used for categorical variables and the Spearman-Brown's correlation coefficient was used for quantitative variables. Disagreements were resolved via discussion among coders and thanks to the collaboration of a third reviewer (A.F.), who helped resolve any unresolved disagreements in the previous discussion between the two initial coders.

Meta-aggregation was used to synthesize the verbatims used in the selected studies. Prior to this extraction, two coders (R.N. and O.C.) independently read and reread the articles carefully to obtain a preliminary understanding. The verbatims and categories

defined by the authors were extracted from each article and inserted into an Excel table. The coders created a finding from each verbatim, elaborating a temporary list of findings and grouping these into categories. Afterwards, a consensus was achieved of independently extracted findings and categories, to group the categories and create themes to group the same.

4. Results

4.1. Study characteristics

After the coding process, the inter-coder agreement was 0.74 (mean Cohen's Kappa $\kappa=0.49$ and the mean Spearman-Brown correlation was $r = 0.99$). The greatest index of disagreement was detected in the assessment of quality (Table 2).

[***Please insert Table 2 about here***]

Of the 17 studies included in this review, 12 were qualitative studies (25–36) and five were mixed method designs (37–41). The selected studies equaled a sample of 606 students of all years of nursing, most of whom were women. Regarding the study aims, 10 studies evaluated the training actions based on student satisfaction (level 1 – Reaction). However, only four measured level 2, according to the Kirkpatrick model (learning) and in only three studies, level 3 (behavior) was measured. No study analyzed whether the act of training had an effective and efficient impact on their professional placement (level 4).

Regarding teaching and learning strategies, most studies ($n=12$) included simulation as a strategy to reflect, explore and acquire social competencies in EoL care (26,27,29,31–33,36–41)

4.2. Synthesis results

In total, 260 illustrations were identified and grouped into three themes and 14 categories (Table 3).

[***Please insert Table 3 about here***]

4.2.1. Feelings and emotions during the performance of the pedagogical activity

Most studies (n=14) reported the emotional responses that were generated in nursing students during the performance of their pedagogical activities related with death and the process of dying; these are presented below:

a. Emotional experience while participating in the pedagogical activity.

Many studies described that students experienced favorable feelings and emotions as a result of their participation in the pedagogical activity, such as: being happy and feeling thankful for having participated in the activity, showing interest, as it was an important subject for them, feeling useful, emotional and moved, as well as showing a decreased level of anxiety towards death after completing these activities. In particular, positive evaluations were provided for clinical simulation activities, as these represented a facilitating element for experiencing realistic and neutral situations, as students generally feel that the emotions are truthful and the environment conveys a feeling of safety and ease, feeling relinquished of severe consequences in the event of error (25–27,29,32–35,37–41).

In addition, some studies featured a certain ambiguity in the students' feelings when participating in programs on EoL, such as feeling both sad and emotional because of the complexity of the subject, as well as feeling happy for undergoing the experience and learning about the care of people who are dying (32,33,35).

b. Feelings when being with the inert body.

Only three articles referred to the array feelings expressed by students when dealing with a lifeless body (27,29,35). For example, in some studies students described this experience as being something chilling and terrifying, while other students considered it an honor to attend to the body of the dead person and continue to do something for them once they have passed away.

c. Feelings when dealing with death and/or the process of a patient dying.

Participation in EoL programs is considered a challenge in order to face emotional demands, which are mostly unfavorable. Many studies have shown that students feel confronted and “strange” when seeing how a person dies, knowing that they cannot do anything to avoid the situation (25,27,28,38). Some students undergo feelings of helplessness, anger, disbelief and negation after reflecting on the experiences of their participation in EoL (28).

d. Feelings when accompanying and/or supporting family members.

In the studies based on simulation where the family was present in the scenarios, the students experienced difficulties as they had to treat the patient as well as attend to the family members’ questions and emotional distress (33,38).

However, other students considered that it was an honor to help the family, acknowledging that the simulation provided them with the opportunity to perform the family role, which was perceived as interesting as it enabled them to empathize with the feelings and pain experienced by the person accompanying the terminal patient (27,33,39).

e. Strengths and personal development derived by participation in the program.

Some students perceived the experience as being an opportunity to learn about themselves and their feelings, learning from their mistakes and enjoying the same, valuing what is really important in life, gaining confidence and applying critical thinking (26,28,31,35,37).

4.2.2. End-of-life education among nursing students.

a. Characteristics of the educational programs/pedagogical activities.

The assessments performed by students regarding the characteristics of the education programs which they participated in, were gathered in 13 of the 17 studies analyzed in this review (25–27,29–35,37,39,40).

Simulation-based activities have been considered primarily as educational sessions, which were considered useful, valuable and beneficial for learning. Some of the strengths of these programs are that the scenes are so real that they allow students to connect with the reality and become even more involved in the activity (26,27,31–33,37) and also the appropriateness of the duration of the sessions (39,40).

Other strategies of teaching and learning, such as discussion groups, videos, music, poems, mind maps, images, have been described by students as being fun, understandable, useful and effective methods for facilitating learning and exploring emotions. These interactive methods are a novelty for a completely unknown subject and motivate students to improve learning (25,35).

b. The role of professionals, moderators, mentors, and actors in pedagogical activities.

Four of the 17 studies reflected on the perceptions of students regarding the role that the professionals fulfill in the interventions. Some studies reflected that students positively valued these actions, highlighting the usefulness of the feedback to improve their future

professional acts, thanking the honesty and frankness with which they described their personal and work experiences on EoL, considering this as being an excellent resource for providing greater knowledge on the subject (25,30,37,39).

c. Aspects related to knowledge of end of life care.

Possibly the most current and significant category in the studies analyzed, was related with the knowledge considered necessary for EoL care (25,26,30,33–37,39–41).

The students perceived that these activities helped them to learn and improve the concept of care and facilitated their ability to express emotions (25,35,36,39). Listening to the stories of others, observing and reflecting, facilitated self-knowledge, critical thinking and evaluating all the related aspects, as well as emotional needs and the spiritual and cultural needs of the patients-, as well as the family (26,30,33,34,41). Their participation as students in programs directed at EoL, helped them to understand the role of nursing in this care context, assuming that not everything has been said and done for patients who are dying and feeling prepared for future professional interventions (25,26,37,40).

Likewise, clinical placements are highlighted for their role of facilitating learning once the pedagogical activities are performed (27,30,36,40), which students value as an important way of learning, consolidating and recognizing the knowledge acquired in these activities.

In contrast, the lack of real cases, and the lack of supervision on behalf of specialized professionals described in some studies, lead to feelings of disappointment for certain students (25,36) and a lack of safety in the care of terminal patients, leading to the need to participate in further practical activities (33).

d. Contribution of debriefing/group discussions on learning.

The contribution of debriefing (26,37,39,41), was generally valued as being positive and valid for complementing the knowledge which cannot be attained in the classroom (26,39,41). Likewise, the group debate or discussion favored reflexive learning, interaction, and collaborative learning (35).

4.2.3. Competencies acquired on death and end-of-life.

a. Communication skills developed after the pedagogical activity.

In most studies (26,29–40) students felt that their participation in pedagogical activities were a means to help them to improve communication activities, both with the patient and the family. More specifically, learning to listen was emphasized, as well as showing interest and respect towards the patient and family members (29–31,35,37,40).

Likewise, most studies noted the improved confidence developed by students for speaking in public and in facing group work, such as the preparation and ability to talk about and face EoL care (26,30,34,36–39). Knowing what to say and what not to say, and how to give bad news was one of the aims achieved by students due to their concern for the lack of experience surrounding death and care in the process of dying (32,35). The importance of silence, of being present, and knowing how to be there, made sense for many students after their interventions, as well as establishing empathy with patients and family members (30,33,35,38,40).

b. End-of-life patient care

The performance of pedagogical activities helped students to acquire knowledge in patient care (26,27,30,32,33,38,40), by adopting a biopsychosocial vision of care (26,33,40). In this sense, some students described that the best way to provide care to a patient at the end of their days is being at their side, attempting to get to know them,

allowing them to pass away and providing the best care for their death. These experiences helped students to gain awareness on what accompaniment means as, in these cases, knowing how to be at the patient's side is what truly distinguishes professional quality (27,30,38), as well as the respect for the decisions taken by patients and family members and the education with which support should be offered to the patient in order for that person to have a good death (32).

c. Valuing and covering the needs of family members

Several studies have focused on students' opinions of the knowledge acquired regarding how to approach the needs of family members (26–28,32,33,37–41). This research is mostly based on simulation as an educational strategy, and is positively valued, as the family is included in the simulated activity, emphasizing the development of empathy and the overall process of learning (26,27,39). Other positive points in this area are the improvement of self-confidence, learning how to talk with the family, finding the appropriate words for consolation and knowing how to listen (26,32,37,40,41).

In summary, experiencing the death of a significant person in a simulated scenario, changed the manner in which students treated family members which could, ideally, have a positive impact on their future role in the profession (28).

d. The role of nursing in end-of life care

Numerous studies have played special attention to the role that nursing has in EoL care (26,27,30,38,39,41). Observing the actions of specialized professionals in this context in simulated environments, was not only a means to learn everything related to care, but also a way to recognize the work performed by the nursing staff in this area. For students, the most significant sentiments displayed by these professionals were empathy, sensitivity, sincerity and the respect with which they treated the patients and

family members (41), as well as knowing what to say and how to say it (30) or being at the patient's bedside in silence when death approaches, as another way of providing effective support (38).

e. Reflections on end-of-life care and proposals for change

Other studies have focused on the reflections of students on the knowledge acquired on EoL once the activities have been performed, which include proposals for change (25,27,35–37).

After recounting their personal experiences related with death, students gave specific proposals for improvements, such as not judging the grievance of family members, being more understanding, respectful and empathic with people who are grieving and seeking coping strategies to enable them to work without being overwhelmed by emotions (35).

The new knowledge acquired in the educational activities enabled the students to reflect on their personal past experiences in relation to this subject (25) and realize the challenges involved when caring for patients at the end of their life, as well as the difficulties they may have to face in the future (26,32,37,38).

5. Discussion

This manuscript presents the results of a systematic review based on the meta-synthesis of qualitative data and on the experiences of undergraduate nursing students participating in education EoL programs.

Regarding the teaching and learning strategies employed in the studies reviewed, activities based on experiential learning are particularly noteworthy, in other words, where the student goes from adopting a receiving attitude of the information to having to fulfill a role of participation and active reflection.

The strengths of the activities used in student learning include increasing their sense of self awareness, learning to interact and learn from the experience of others, reflecting on care in EoL and gaining confidence for applying the knowledge learned in their future work; all these aspects have been noted in other studies which have similarly focused attention on the advantages of experiential didactic strategies (42–49).

Clinical simulation activities are highlighted in other studies due to their frequent use (44,45,50,51) and are valued, primarily, as being a beneficial and enriching educational strategy for extending clinical skills and knowledge on EoL care, as well as for acquiring experience in the treatment of the patient and family members before the student experiences their first real clinical case. Nonetheless, some studies have also underlined the lack of literature or existing research on the use of simulation for education on EoL among nursing students (52,53).

Regarding the assessment of the activities performed by students, the results of this review are primarily positive regarding their experiences with EoL. In consonance with Smith et al (48), students mostly express feelings of joy, emotion and gratefulness for having had the opportunity to receive this training and feeling better prepared for the future on an intellectual, emotional and care level, as shown by other studies (44,45,50,54–56). In agreement with Lippe (57) in general, the pedagogical activities are valued as being useful, beneficial and effective for achieving a better understanding of care at the EoL and gaining skill in the treatment of the patient and family, which thus favors a reduced anxiety in some students, as noted by Hamilton (53). In addition, the reflection and subsequent debate sessions have constituted another positive experience according to the work by Johnson (58) by providing the opportunity to become more familiar with the role that a nursing professional must perform in EoL

care, and valuing this care from the holistic point of view, while considering the family and their needs within this context.

Another positive aspect derived from participation in activities on EoL, has been the improvement in communication skills on behalf of students. The simulated reality with the family members or in clinical environments during clinical placements, improved the way the students related and communicated with the patient and family members in these complex situations. Knowing what to say, and being able to listen and accompany a person in silence were the skills that students highlighted the most, as demonstrated by other studies (48,59). Along these lines, other studies have highlighted the need for further clinical placements in order to interiorize the knowledge on this care. Often, students are unable to practice this kind of care due to their possible inexperience, or because they lacked any opportunity to work with these kinds of clinical cases (53,60–62).

One aspect highlighted in the students' overall assessment was the challenge they faced approaching such a delicate and difficult issue, such as death and the process of dying. For many patients, the moment when they actually witnessed a patient die in the simulations or during clinical placements, was a very strange and surrealistic situation, as well as a direct confrontation. Reflecting on this and hearing personal experiences also made them relive painful and moving moments; this is in line with the results reported by former studies (11,12).

Several weaknesses have been found in the studies included in this review. On the one hand, most studies only evaluate the level of satisfaction immediately after the program has been completed, therefore it is unknown what the impact of the program is in the mid and long term. On the other hand, many studies used simulation strategies as a

pedagogical approach, which hampered the comparative analysis, according to the activity performed. In addition, the fact that the participants were not all from the same course is a source of bias, seeing as the emotions, feelings, level of knowledge and experience with the clinical symptoms differ according to the academic year, and this can, therefore, influence students' perceptions, as noted by Bucela et al. (10).

The main limitation of this review is the limited number of studies included which has not allowed for the creation of homogeneous subgroups to enable comparisons among the same. Future research considering training in EoL among nursing students could avoid this limitation in future review studies.

5. Conclusion

The students who participate in pedagogical activities related to education in EoL perceive these as being effective for the improvement of their communication and knowledge skills.

To advance the available knowledge on this subject, further research is needed which should be focused on the quality of learning, the assessment of the impact of the same on clinical practice, as well as the assessment of this training in students, in both the mid and long term, and its impact on both patients and family members.

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Figure 1. Flow diagram. Study selection process

Table 1. Characteristics of studies.

<i>Author (year of publication)</i>	<i>Study design/Methodological approach/Theory</i>	<i>Sampling</i>	<i>Data collection/Analyses</i>	<i>Study population</i>	<i>Study aim</i>	<i>Level of assessment / Study results</i>
Bassah et al. (2018)	Design: Qualitative/ Approach: Unknown/ Theory: Experiential learning (Kolb, 1984)	Unknown	Focus group/ Thematic analysis	2nd and 3rd year nursing students	To describe the experiences and perceptions of nursing students in Cameroon on a course on palliative care.	Kirkpatrick: 3/ Recognition of the importance of palliative care/Strength: Providing further learning via the use of educational strategies/Weakness: Need for greater clinical experience and good mentors
Bloomfield et al. (2015)	Design: Mixed / Approach Unknown	Convenience	Focus group/ Thematic analysis	2nd year nursing students, 4th year medical students and actors from a medical theatre company	Design, implement and assess an educational intervention employing actors simulating patients to improve the students' skills to communicate with dying patients and their families.	Kirkpatrick: 2 /Useful and beneficial activity for students. Supports introspection of feelings, reflection and improved learning in end-of-life care in order to perform the same in the future. Suggestion that this should be a mandatory pedagogical activity in the school curriculum.
Eaton et al. (2012)	Design: Qualitative Approach: Phenomenology Theory: Jeffries (2005) Framework	Convenience	Other Thematic analysis	4th year nursing students	Examine whether simulation on end of life improves learning of home care and terminal patients	Kirkpatrick: 3 /Three main themes: experiential learning, positive results and the family as a client/ The students' perceptions on their learning based on simulation support its value and continued use.

Fabro et al.(2014)	Design: Mixed Approach Unknown / Theory: The Nursing Education Simulation Framework de Jeffries	Unknown	Documents/ Analysis: unknown	4th year nursing students	Apply the principles of palliative care and therapeutic communication skills for a terminal patient from the experience of simulation/	Kirkpatrick: 2 /With simulation, students achieve a greater comfort and confidence in the care of terminal patients and their families, greater knowledge on palliative care and greater communication skills between family members and other health professionals
Gillan et al.(2016)	Design: Qualitative Approach Unknown	Convenience	Semi-structured interview Participant observation / Analysis: Other	4 th year nursing students	Explore the experiences of 18 nursing students on simulation of end of life care.	Kirkpatrick: 3 / The students considered simulation to be a highly important tool to ensure quality of care and to be competent. They described positive experience during clinical placements highlighting the important role of clinical educators and other nurses involved in the mentoring.
Guillaumet et al. (2018)	Design: Qualitative Approach: Phenomenology	Convenience	Documents /Analysis: Content /Observation Participant, Documents	2 nd year nursing students	Explore narratives on personal experiences surrounding death via a teaching experience based on reflexive practice.	Kirkpatrick: 1 /Useful didactic strategy in nursing training as in enables the understanding of meanings and of the impact in complex situations. The reflection on lived experiences helps guide the process of comprehensive care.
Hjelmfors et al. (2016)	Design: Qualitative Approach: Ethnography	Unknown	Analysis: Unknown	3 rd year nursing students	Learn about palliative care, communication and care for a terminal person and their family members.	Kirkpatrick: 1 / Students considered that simulation was a difficult experience and that they lacked knowledge and communication skills on end-of-life/ The need for support was acknowledged, via specialized teaching material for students prior to the simulation as well as improved competency of the tutors regarding palliative care.
Hold et al. (2015)	Design: Qualitative Approach: Unknown	Convenience	Focus group /Thematic analysis	Unspecified	Examine the perceptions and experiences of the nursing students enrolled in an optional nursing subject on	Kirkpatrick:1 / Reflection and interactive exercises helped the students to work on respect towards patients and empathy. With these learning activities, the students were exposed to the complexities of

					palliative care and end of life care.	nursing practice, with this training contributing towards their professional identity.
Kenny et al. (2016)	Design: Qualitative Approach: Unknown	Convenience	Focus group /Thematic analysis	3rd year children's nursing students and university drama students	Determine whether the clinical communication skills developed in the degree can transfer to an end of life scenario.	Kirkpatrick:1 / Simulation helped students to reflect on end-of-life care, valuing the improvement in the skills acquired.
Kopka et al. (2016)	Design: Qualitative Approach: Unknown	Unknown	Others / Analysis: Unknown	4 th year nursing students	Help students process the death of a patient and gain trust and skills for end of life care.	Kirkpatrick:1 / This teaching strategy proved to be efficient, and attractive for both teachers and students, improving the students' communication skills in this critically important area.
Leighton et al. (2009)	Design: Qualitative Approach: Unknown	Unknown	Structured open interview / Analysis: Unknown	2 nd , 3 rd and 4th year nursing students	Describe a simulated clinical experience based on a clinical end of life scenario.	Kirkpatrick:1 /Participants without prior experience learnt and critically reflected on end-of-life care. Participants expressed a need to repeat these experiences in order to gain trust.
Lillyman et al. (2011)	Design: Qualitative Approach: Unknown	Unknown	Discussion groups /Others /Analysis: Content/ (Holloway 2008)	2nd year nursing students	Use storyboarding to approach end-of-life problems and involve students in creative and critical thinking.	Kirkpatrick:1 / The storyboard helped identify cultural aspects related with the patient. The students appreciated being able to share and listen to the experiences of others.
Montgomery et al. (2016)	Design: Mixed Approach: Unknown	Unknown	Others /Analysis: Unknown	4th year nursing students	Approach the deficit in end-of-life care for undergraduate nursing students by incorporating a simulated hospice experience in the course.	Kirkpatrick:1 / Simulation was found to be effective. The students expressed a greater understanding of the physiopathology of end-of-life, as well as improving their communication skills.

Sarabia-Cobo et al. (2016)	Design: Mixed Approach: Unknown	Convenience	Others /Analysis: Content analysis	2nd year nursing students	Evaluate an intervention for learning about palliative care by using low fidelity clinical simulation in undergraduate nursing students	Kirkpatrick:2 / Low fidelity clinical simulation in palliative care was an appropriate low cost tool for acquiring competitive skills and improving students' communications skills.
Tuxbury et al.(2012)	Design: Mixed Approach: Unknown	Unknown	Documents, Others /Analysis: Unknown	Undefined (nursing students and drama students)	Evaluate the use of forum theatre to teach end-of-life care to undergraduate nursing students, based on effective and compassionate communication with patients and family members.	Kirkpatrick: 1 / The results of the project indicated that the forum theater was an effective teaching method for end-of-life care. Students achieved improved understanding and end-of-life care, and decreased levels of anxiety related to this subject.
Van der Wath et al.(2015)	Design: Qualitative Approach: Unknown/ Theroy: Experiential learning (Kolb 1984: 33)	Convenience	Others / Analysis: Other (Tesch /cited in Creswell 2009: 85)	2 nd year nursing students	Explore and describe the experiences of nursing students in end-of-life care through experiential learning within a constructivist educational model.	Kirkpatrick: 1 /The participants reflected on what they had learnt and clarified their values in relation to death. They reflected on their future in clinical practice.
Venkatasalu et al. (2015)	Design: Qualitative Approach: Other (Phenomenology)	Unknown	Semi-structured interview Thematic analysis	1 st year nursing students	Evaluate the effectiveness of high fidelity simulation teaching versus classroom teaching on end-of-life education.	Kirkpatrick: 2 / In the didactic strategies – Seminars vs simulation-, an improvement was found in students' knowledge on end of life care. However, simulation was perceived as a better strategy in terms of practical skills and emotional experience.

Table 2. Methodological quality of studies (CASP appraisal)

	<i>Bassah et al. (2018)</i>	<i>Bloomfield et al. (2015)</i>	<i>Eaton et al. (2012)</i>	<i>Fabro et al.(2014)</i>	<i>Gillan et al.(2016)</i>	<i>Guillaumet et al. (2018)</i>	<i>Hjelmfors L et al. (2016)</i>	<i>Hold et al. (2015)</i>	<i>Kenny et al. (2016)</i>	<i>Kopka et al. (2016)</i>	<i>Leighton et al. (2009)</i>	<i>Lillyman et al. (2011)</i>	<i>Montgomery et al. (2016)</i>	<i>Sarabia-Cobo et al. (2016)</i>	<i>Tuxbury et al.(2012)</i>	<i>Van der Wath et al.(2015)</i>	<i>Venkatasalu et al. (2015)</i>
Was there a clear statement of the aims of the research?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Is the qualitative methodology appropriate?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Was the research design appropriate to address the aims of the research?	1	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1	1
Was the recruitment strategy appropriate?	1	1	-	-	1	1	-	1	-	-	-	-	-	1	-	1	1
Were the data collected in a way that addressed the research issue?	1	1	1	-	1	1	1	1	1	1	-	1	1	1	1	1	1
Has the relationship between researcher and participants been adequately considered?	-	0	1	0	1	0	0	0	0	0	0	0	0	1	0	1	1
Have ethical issues been taken into consideration?	1	1	-	1	1	-	1	1	1	-	-	1	-	1	-	1	1
Was the data analysis sufficiently rigorous?	1	-	1	-	1	1	1	1	-	-	-	1	-	1	-	1	1

Is there a clear statement of findings?	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1
How valuable is the research?	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Symbols indicate: 1 =Yes, 0 =No, - = Unknown

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Table 3. Themes and categories of the metasynthesis.

Themes	Categories	Bassah et al. (2018)	Bloomfield et al. (2015)	Eaton et al. (2012)	Fabro et al.(2014)	Gillan et al.(2016)	Guillaumet et al. (2018)	Hjelmfors et al. (2016)	Hold et al. (2015)	Kenny G. et al (2014)	Kopka et al. (2016)	Leighton et al. (2009)	Lilyman et al. (2011)	Montgomery et al. (2016)	Sarabia-Cobo et al. (2016)	Tuxbury et al.(2012)	Van der Wath et al.(2015)	Venkatasalu et al. (2015)
		Feelings and emotions during the performance of the pedagogical activity	Emotional experience while participating in the pedagogical activity	•	•	•	•	•		•		•	•	•	•	•	•	•
	Feelings when being with the inert body					•		•										•
	Feelings when dealing with death and/or the process of a patient dying	•			•	•	•					•		•				
	Feelings when accompanying and/or supporting family members				•	•						•		•				
	Strengths and personal development derived by participation in the program		•	•			•			•								•
End of life education in nursing students	Characteristics of the educational programs/pedagogical activities	•	•	•		•		•	•	•	•	•	•	•	•			•
	The role of (professionals, moderators, mentors and actors) in pedagogical activities	•	•						•	•				•				
	Aspects related to knowledge of end of life care	•	•	•					•			•	•	•	•	•	•	•
	Contribution of debriefing/group discussion on learning		•	•										•		•	•	
Competencies acquired on death and end of life	Communication skills developed after the pedagogical activity		•	•	•			•	•	•	•	•	•	•	•			•
	End of life patient care			•	•	•		•				•			•	•		
	Valuing and covering the needs of family members		•	•	•	•	•				•	•		•	•	•		
	The role of nursing in end of life care			•	•	•			•					•		•		
	Reflections on end of life care and proposals for change	•	•	•	•	•		•			•				•		•	•

Symbols: • Yes

Database N° results	Terms used (free text searches)	Search fields Filters used
Medline: 956	(nursing) OR nurse-patient relation) OR Education nursing graduate) OR Nursing Education) OR nursing students) OR graduate nursing) OR undergraduates nursing)) AND ((((((Palliative Care) OR Terminal care) OR End of life) OR end-of-life care) OR EoL) OR death)) AND ((Communication skills training) OR (((((((Clinical training OR Learning approach)) OR educational tool) OR pedagogical strategies) OR (Learning AND (activities OR programme* OR project))) OR (Education* AND (activities OR programme* OR project))) OR (didactic AND (activities OR programme* OR project))) OR Educational interventions)) OR Educational strategies)))) AND ((((((qualitative research) OR clinical trials) OR longitudinal study) OR education projects) OR educational projects) OR educative projects) OR educational programme) OR training innovation)	Search fields: <i>All Fields</i> Filters used: <i>English, Spanish</i> <i>last 10 years</i>
Scopus: 1357	((TITLE-ABS-KEY (death) OR TITLE-ABS-KEY (end-of-life AND EoL) OR TITLE-ABS-KEY (end-of-life AND care) OR TITLE-ABS-KEY (end AND of AND life) OR TITLE-ABS-KEY (terminal AND care) OR TITLE-ABS-KEY (palliative AND care))) AND ((TITLE-ABS-KEY (nursing) OR TITLE-ABS-KEY (nurse-patient AND relation) OR TITLE-ABS-KEY (education AND nursing AND graduate) OR TITLE-ABS-KEY (nursing AND education) OR TITLE-ABS-KEY (nursing AND students) OR TITLE-ABS-KEY (graduate AND nursing) OR TITLE-ABS-KEY (undergraduates AND nursing))) AND ((TITLE-ABS-KEY (educational AND interventions) OR TITLE-ABS-KEY (learning AND (activities OR programme* OR project)) OR TITLE-ABS-KEY (education* AND (activities OR programme* OR project)) OR TITLE-ABS-KEY (didactic AND (activities OR programme* OR project)) OR TITLE-ABS-KEY (pedagogical AND strategies) OR TITLE-ABS-KEY (educational AND tool) OR TITLE-ABS-KEY (clinical AND training) OR TITLE-ABS-KEY (learning AND approach) OR TITLE-ABS-KEY (educational AND strategies) OR TITLE-ABS-KEY (communication AND skills AND training))))	Search fields: <i>Article title, Abstract, Keywords</i> Filters used: <i>English, Spanish</i> <i>last 10 years</i>
Web Of Science: 2416	(Educational interventions) OR TEMA: (Learning AND (activities OR programme* OR project) OR TEMA: (Education* AND (activities OR programme* OR project) OR TEMA: (didactic AND (activities OR programme* OR project) OR TEMA: (pedagogical strategies) OR TEMA: (educational tool) OR TEMA: (Clinical training) OR TEMA: (Learning approach) OR TEMA: (Educational interventions) OR TEMA: (Educational strategies) OR TEMA: (Communication skills training) AND (Palliative Care) OR TEMA: (Terminal care) OR TEMA: (End of life) OR TEMA: (end-of-life care) OR TEMA: (death) OR TEMA: (end-of-life (EOL)) AND ((((((TEMA: (nursing) OR TEMA: (nurse-patient relation)) OR TEMA: (Education nursing graduate)) OR TEMA: (Nursing Education)) OR TEMA: (nursing students)) OR TEMA: (graduate nursing)) OR TEMA: (undergraduate nursing))	Search fields: <i>Topic</i> Filters used: <i>English, Spanish</i> <i>last 10 years</i> <i>Databases: WOS, CCC, DIIDW, KJD, MEDLINE, RSCI, SCIELO.</i>
CINAHL Plus: 1479	TX Educational interventions OR TX (Learning AND TX (activities OR programme* OR project)) OR TX (Education* AND (activities OR programme* OR project)) OR TX (didactic AND (activities OR programme* OR project)) OR TX pedagogical strategies OR TX educational tool OR TX Clinical training OR TX Learning approach OR TX Educational strategies OR TX Communication skills training AND TX Palliative Care OR TX Terminal care OR TX End of life OR TX end-of-life care OR TX EOL OR death AND TX nursing OR TX nurse-patient relation OR TX Education nursing graduate OR TX Nursing Education OR TX nursing students OR TX graduate nursing OR TX undergraduates nursing	Search fields: <i>TX All Text</i> Filters used: <i>English, Spanish</i> <i>last 10 years</i>
Dialnet Plus: 234	enfermer* OR nursing AND enseñã* OR educa* OR estudiante* AND paliativo* OR muerte	Search fields: <i>Contains the words</i> Filters used: <i>Last 10 years</i>
Eric: 69	Nurses AND Nursing Research OR Students nursing AND nurse-patient relation OR Education nursing OR graduate Nursing Education OR nursing students graduate OR nursing undergraduates AND nursing Palliative Care AND Terminal care OR End of life end-of-life OR care end-of-life (EOL) OR death	Search fields: <i>All Fields</i> Límites usados: <i>Las 10 years</i>
Cuiden Plus: 59	[cla="Metodología de enseñanza"] and [cla="Muerte"] [cla="Educación en Enfermería"] and [cla="Muerte"] [cla="Enseñanza"] AND [cla="Cuidados paliativos"] [cla="Enseñanza"] AND [cla="Muerte"] [cla=Enseñanza en enfermería] AND [cla=Muerte] [cla=Enseñanza en enfermería] AND [cla="Cuidados paliativos"] [cla="Metodología de enseñanza"] and [cla="Muerte"]	Search fields: <i>Based on key words</i> Filters used: <i>Last 10 years</i>

	[cla="Metodología de enseñanza"] and [cla=" Cuidados paliativos"] [cla="Enseñanza"] and [cla="Enfermos terminales"] [cla= Enseñanza en enfermería] AND [cla="Enfermos terminales"]	
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Annex 1: Search strategy

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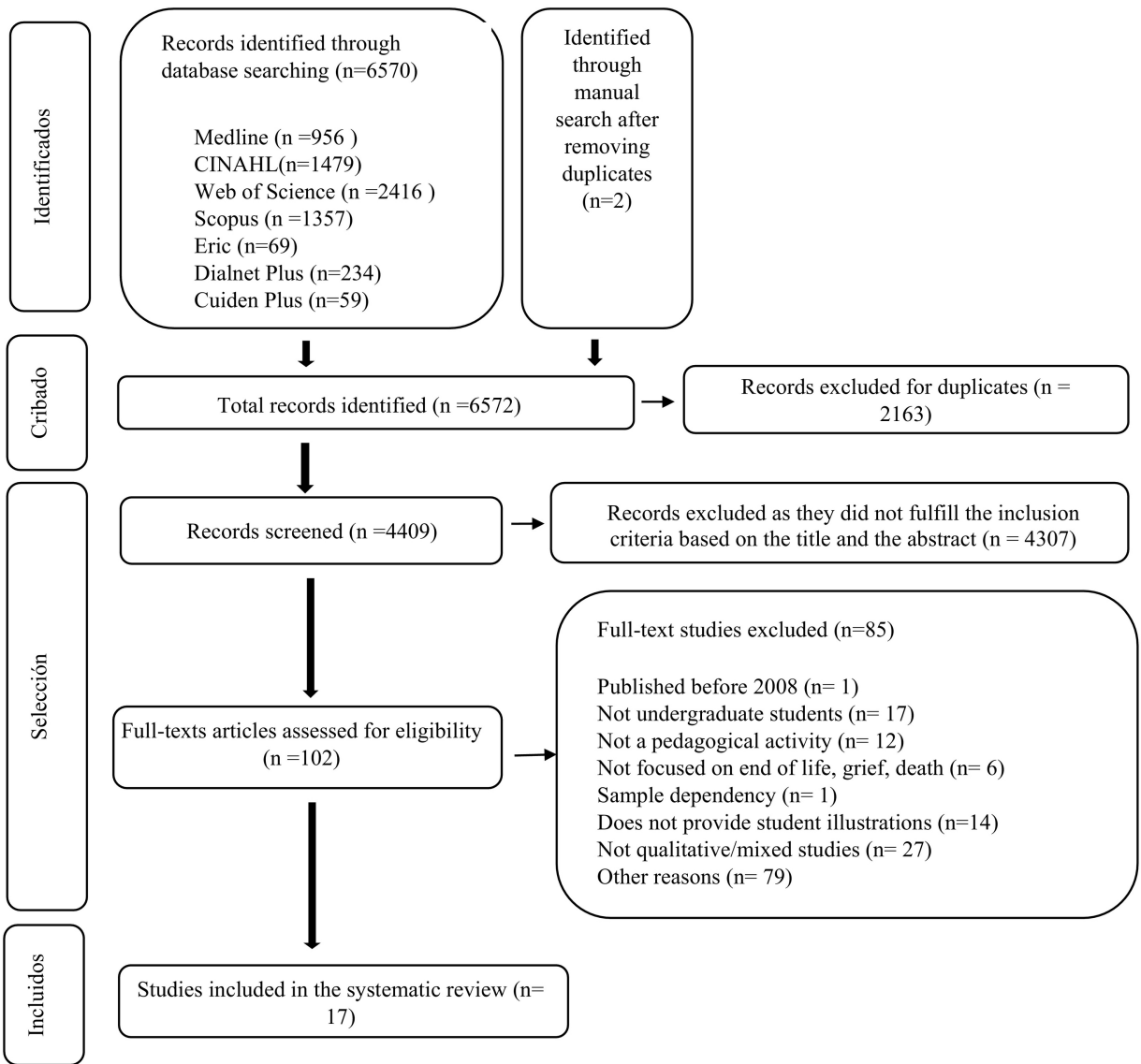


Figure 1