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Competency-based spiritual care education program for undergraduate nursing students: a quasi-experimental study

Sara Sitefane^{1*} , Ana Afonso¹ , Linda Ross² , Wilfred Mcsherry³ , Isabel Rabiais⁴  and Sílvia Caldeira¹ 

Abstract

Background The International Council of Nurses underscores the importance of integrating spirituality into holistic nursing care, advocating for the recognition and respect of individuals' spiritual beliefs and values. Addressing this need, the European project EPICC (Enhancing Nurses' and Midwives' Competence in Providing Spiritual Care through Innovative Education and Compassionate Care) promotes the development of spiritual care competencies within nursing curricula. In Portugal, however, the integration of spiritual care education in undergraduate nursing programmes remains inconsistent.

Aim This study aimed to evaluate the effectiveness of a digitally mediated pedagogical intervention, based on the EPICC Spiritual Care Education Standard, in enhancing spiritual care competencies among undergraduate nursing students in Portugal.

Methods This quasi-experimental study, conducted in partnership with the University of South Wales during the first semester of 2024, employed a non-equivalent control group pre-test and post-test design to evaluate the impact of implementing the **EPICC matrix**. A total of 36 undergraduate nursing students from a Portuguese nursing school participated in a hybrid course, using a digital tool to support learning. The **EPICC Spiritual Care Education Standard** and the **EPICC Spiritual Care Competency Self-Assessment Tool**, both translated, validated, and culturally adapted into European Portuguese, were utilised to measure outcomes.

Results A significant improvement in self-reported competencies across all four EPICC domains: Intrapersonal Spirituality, Interpersonal Spirituality, Spiritual Care Assessment and Planning, and Spiritual Care Intervention and Evaluation were demonstrated. Course satisfaction was reported by 80.5% of participants, usability of the digital resource by 77.7%, and 94.4% indicated they would recommend the course to others.

Conclusions The study demonstrates the potential of the EPICC framework to enhance spiritual care competencies among nursing students. These results support the integration of evidence-based spiritual care education into Portuguese undergraduate nursing curricula, facilitated through digital pedagogical approaches.

Keywords Competency-based education, EPICC, Midwifery, Students, Nursing, Spiritual care, Online program, Quasi-experimental design

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Introduction

The Internacional Council of Nurses promotes multiple core elements of nursing that integrate and enhances aspects of care such as “(...) promote an environment in which the human rights, values, customs, religious and spiritual beliefs of the individual, families and communities are acknowledged and respected by everyone” [1] (p.7). Also, healthcare institutions and professional regulatory bodies emphasise in their codes of ethics the importance of including all dimensions of the human being to promote holistic care, aligning with the concept of health and well-being offered by the World Health Organization [2–4]. This holistic paradigm includes the spiritual dimension.

The concept of spiritual care has evolved to encompass not only religious affiliation but broader expressions of spirituality, including the need for connection with self, others, or nature. Over the years, the scientific community has sought to clarify the concepts of spirituality [5–8] and spiritual care [9–11]. Nevertheless, the most widely accepted definition of spirituality among researchers is that of the European Association for Palliative Care (EAPC), described as:

(...) dynamic dimension of human life that relates to the way persons (individual and community) experience, express and/or seek meaning, purpose and transcendence, and the way they connect to the moment, to self, to others, to nature, to the significant and/or the sacred. [12] (p. 88).

Aligned with the interest in implementing spirituality in clinical practice and educating healthcare staff to provide spiritual care, the EPICC (Enhancing Nurses’ and Midwives’ Competence in Providing Spiritual Care through Innovative Education and Compassionate Care) project and latterly a network [13–19] has been developed. This project adopts the EAPC definition of spirituality and customised the NHS Education for Scotland’s (2010) definition of spiritual care, which is described as:

Care which recognises and responds to the human spirit when faced with life-changing events (such as birth, trauma, ill health, loss) or sadness, and can include the need for meaning, for self-worth, to express oneself, for faith support, perhaps for rites or prayer or sacrament, or simply for a sensitive listener. Spiritual care begins with encouraging human contact in compassionate relationship and moves in whatever direction need requires. [20] (p.2).

Between 2016 and 2019, this European project engaged professionals in practice, education, and research from 21 countries, including Portugal, to establish a consensus

on spiritual care competencies [13, 15, 18, 19, 21]. The project produced several resources and tools including the EPICC Spiritual Care Education Standard (van Leeuwen et al., 2021) that was based on the seminal work of [14, 16, 22] and the EPICC Spiritual Care Competence Self-Assessment Tool (Giske et al., 2023), which aim to address the unique spiritual needs and contexts of each nursing student in a responsive and consensual manner [15, 18].

The EPICC Spiritual Care Education Standard defines spirituality and spiritual care, and presents four core spiritual care competencies – Competency 1: Intrapersonal Spirituality; Competency 2: Interpersonal Spirituality; Competency 3: Spiritual Care: Assessment and Planning; and Competency 4: Spiritual Care: Intervention and Evaluation - across three sub-dimensions of care - knowledge, skills and attitudes [14, 16, 20, 21]. The EPICC Spiritual Care Education Standard was validated as the EPICC Spiritual Care Competence Self-Assessment Tool [23], enabling nursing and midwifery students to self-assess their perceived spiritual care competency [24].

Collectively, these two instruments advance a comprehensive approach to spiritual care education, facilitating the development of essential competencies among nursing and midwifery students. By integrating theoretical knowledge with self-assessment practices, support students and educators in deepening their understanding of spirituality and enhancing the delivery of holistic care. Despite this progress, the implementation of these tools also presents pedagogical challenges, particularly related to students’ conceptual understanding and educators’ teaching strategies [13, 25–30].

To further contextualise this study the literature provides a variety of learning strategies used in undergraduate nursing programmes to support spiritual care education and training [28, 31–37]. These strategies address the four EPICC competencies while promoting student engagement, critical reflection, and participatory learning [28]. However, limited empirical evidence remains concerning how students perceive and self-assess the impact of these strategies on their spiritual care competency development.

This study aims to address this gap by evaluating the impact of implementing the EPICC Spiritual Care Education Standard and the Competence Self-Assessment Tool on the self-perceived spiritual care competencies of final-year undergraduate nursing students in Portugal.

Existing literature suggests that spiritual competency development progresses throughout nursing and midwifery undergraduate education and is influenced by students’ personal beliefs, identities, cultural and religious backgrounds, and clinical experiences [13, 34]. Fostering students’ spiritual well-being is therefore essential, and underscoring the importance of cultivating both the

inner dimensions and their capacity to deliver holistic spiritual care [30, 38].

The EPICC Matrix, which encompasses all the key factors influencing the development of spiritual care competency, serves as a valuable resource for nursing and midwifery educators and clinical supervisors. Offers essential guidance in student selection, curriculum design, and the creation of clinical and academic environments that facilitate effective learning in spiritual care [15]. Nevertheless, the integration of competency-based spiritual care programmes into the undergraduate nursing curricula requires significant investment from academic institutions [8, 19, 25, 27, 30, 32, 33, 37, 38].

Although previous studies have focused primarily on developing instruments and categorising competencies within the EPICC framework's four dimensions [33, 39, 40], the present study contributes to the literature by empirically analysing the impact of implementing these tools on undergraduate nursing students' self-perceived spiritual care competencies.

Methods

Aim and design

This quasi-experimental study used a non-equivalent control group pretest-post-test design [41]. The study was conducted to investigate the effect of implementing a digital education programme, based on the four core competencies in the EPICC Standard, on students' self-assessed spiritual care competency measured by the Portuguese version of the EPICC Spiritual Care Competency Self-assessment Tool. The study was conducted in December 2024.

The primary objective of the course was to develop the spiritual care competencies of undergraduate nursing students in clinical education settings, using the EPICC Spiritual Care Education Standard and the EPICC Spiritual Care Self-Assessment Tool, which had been translated, validated, and culturally adapted to European Portuguese by the same research team.

Participants

Undergraduate nursing students undertaking the final year of a Nursing Degree at one University in mainland Portugal, while in clinical placements.

Inclusion and exclusion criteria

The inclusion criteria for this study were: (1) undergraduate nursing students; (2) engaged in their fourth year of academic coursework; (3) currently in clinical placements; (4) committed to completing every stage of the study, which involved actively engaging in the various phases of data collection and assessment. The exclusion criteria were undergraduate nursing students whose enrolment was suspended at the time of data collection.

Sample size

The sample size was calculated using a free software tool—G*Power. We used a similar study to determine the effect size in teaching spiritual competencies [42]. A prior analysis showed that to compare the difference between 2 independent groups using $d=0.80$, one-tail, alpha value of 5% ($\alpha = 0.05$), and 1-Beta = 0.95, the minimum sample required would be 37 participants per group. The study group consisted of 66 students, achieved by using a non-probabilistic convenience sampling method [41]. All participants met the inclusion criteria and were enrolled in the fourth year of the nursing programme and undertaking clinical placements at the time of recruitment ($n=66$). As students were already organised into pre-existing class groups, random allocation was not feasible. Therefore, the class with the highest level of voluntary participation was assigned to the intervention group ($n=36$), in accordance with the minimum sample size requirements. The remaining students constituted the comparison group ($n=30$). Henceforth, the sample will be referred to as the intervention group - IG (Class A $n=36$) and the comparison group - CG (Class B $n=30$).

This non-randomised allocation reflects the quasi-experimental design of the study and is acknowledged as a potential source of confounding, as differences between class groups—such as prior exposure to content, learning environments, or lecturer engagement—may influence outcomes. Although these factors could not be fully controlled, both groups belonged to the same academic institution, followed the same curricular structure, and were simultaneously engaged in comparable clinical placements, which may mitigate some of these differences. The slight imbalance in group sizes may also have reduced the statistical power to detect small differences between groups, a limitation which is further discussed in the corresponding section of this manuscript.

Intervention

Students completed an online seven modules short course titled 'Spirituality and Spiritual Care' developed by the University of South Wales and University of Staffordshire based on the 4 core spiritual care competencies in the EPICC Standard. Parts of the course were translated into Portuguese by the researcher (SS), who directed students through the course face-to-face during a one-day session in class time. This all-day course was designed with a combinatory approach [43], divided into seven modules, comprising components of the EPICC framework. (Table 1).

The course was initiated by the clinical teaching module lecturer, who provided an introduction, followed by a comprehensive overview delivered by one of the researchers. The course was conducted over a 7-hour session, and throughout duration, the researchers

Table 1 Content of the EPICC course

Content*	Teaching and learning approaches	Learning management systems or software	Time frame
Module 1			15 min
Introduction	Musical Mindfulness. Presentation. Video presentation.	YouTube - Music Online platform* Video Microsoft Office tools	
Module 2			30–45 min
Spirituality and Spiritual Care – Internacional and Nacional Perspective	Presentation. Video presentation. Questionnaire.	Online platform* Video Microsoft Office tools Google forms	
Module 3			60–90 min
Intrapersonal spirituality	Presentation. Video presentation. Reflective assignments. Individual and Group Discussions. Questionnaire.	Online platform* Video Microsoft Office tools Gamification (Word cloud and Student illustration) Google forms	
Module 4			60–90 min
Interpersonal Spirituality	Presentation. Video presentation. Radio presentation. Reflective assignments. Individual and Group Discussions. Case Studies.	Online platform* Video/Audio/Podcast Microsoft Office tools	
Module 5			60–90 min
Spiritual Care: Assessment and Planning	Presentation. Video presentation. Reflective assignments. Individual and Group Discussions. Questionnaire.	Online platform* Video Microsoft Office tools Gamification (Kahoot) Google forms	
Module 6			60–90 min
Spiritual Care: Intervention and Evaluation	Presentation. Video presentation. Individual and Group Discussions. Case Studies.	Online platform* Video Microsoft Office tools	
Module 7			15 min
Conclusion	Presentation. Video presentation. Musical Mindfulness.	Online platform* Video Microsoft Office tools YouTube - Music	

*Content adaptation - Internal online platform of the University of South Wales, the course's programme content is intellectual property of the university

maintained active involvement, facilitating both the online and face-to-face components. The seven modules were predominantly delivered via the University of South Wales' internal online platform, with each module comprising a presentation, a summary, and content assessments. A diverse range of teaching and learning strategies

was employed, including passive instruction, reflective exercises, simulations and case studies designed to foster critical engagement [43, 44]. Gamification elements were delivered in person by the research team (SS), utilising the European Portuguese language to minimise potential bias.

The learning outcomes of the course can be outlined as follows:

- Demonstrate a comprehensive understanding of contemporary concepts and definitions of spirituality and spiritual care, as articulated within the EPICC framework.
- Develop and enhance competencies across the four core spiritual care dimensions of The EPICC Standard.
- Apply acquired knowledge and spiritual care competencies effectively within clinical settings, integrating the spiritual dimension into holistic nursing practice.
- Reflect critically on the impact of educational and pedagogical strategies on their understanding and development of spiritual care competencies.

Data collection

Data for this study were collected on 3rd December 2024. Students in the intervention and comparison groups completed the Portuguese version of the EPICC Spiritual Care Competency Self-Assessment Tool before (pre-test) and after (post-test) the all-day course – tutorial guidance as part of clinical placement activities, using an online form distributed via Qualtrics® software. Prior to data collection, students were invited to participate through an email sent by the university's academic services to all eligible fourth-year students ($n = 66$). This in-class invitation was authorised by the school board and supported by the coordinator of the curricular unit, who also clarified the voluntary nature of participation during previously scheduled tutorial sessions. By accessing the link provided in the email, students were directed to the Qualtrics® software to complete the instrument.

Sociodemographic data and baseline measures of the research variables for both the intervention group and the comparison group were collected as pretest data (T1). However, only the intervention group completed the Spiritual Education all-day course, after which post-test measures were collected and obtained at a second time point (T2). The time frame between T1 and T2 is explicit in Table 1, allowing sufficient time to capture immediate post-intervention effects on spiritual competencies perceived by students. This decision to apply both pre-test and post-test on the same day of the intervention is in line with similar methodological simulation-based nursing education studies [45, 46].

Additionally, at the end of the course, students in the intervention group were invited to voluntarily and anonymously complete a satisfaction familiar questionnaire evaluating the content delivered, the teaching and learning strategies employed, the technological and digital resources utilised, and whether they would recommend the course to other students. It was distributed via a Google Forms link sent by the university's academic services (email). This instrument was aligned with the standard format routinely used by the university throughout the undergraduate nursing programme, with which students were already.

Instruments

EPICC spiritual care competency self-assessment tool Students completed the Portuguese version of the EPICC Spiritual Care Competency Self-Assessment Tool. The original tool in English was developed and validated by Giske et al. (2023), after was translated and cross-cultural adapted into Portuguese in 2024 by Sitefane, who were granted permission by the EPICC Network. The total score of the scale is the sum of all 28 items with a maximum score of 140. The original instrument obtained Cronbach α of the scale of 0.91 and the test-retest correlations ≥ 0.76 . The English version of the tool was previously translated, validated and cross-cultural adapted for the language and culture of European Portuguese by the same research team with a Cronbach α of the scale of 0.92.

Course evaluation questionnaire The questionnaire was administered via Google Forms, previously distributed by the university's assistance services to the students (IG). It included 16 items on a 5-point Likert scale (1 = Dissatisfied to 5 = Very Satisfied). The data were subsequently processed using descriptive analysis of the responses. This activity represents a standard and regular practice within the curricular units of this university. Consequently, the items used in the questionnaire were aligned with those typically employed by the institution, with the addition of components addressing the technological and digital aspects utilised in this course.

(Supplementary material: Course Evaluation Questionnaire).

Data analysis

IBM SPSS Statistics version 29.0.2.0 software programs were used to analyse all the quantitative data. The analysis and the results were validated by the University's Biostatistics Reference and Research Support Service.

No missing data were reported across any of the instruments used, including the pre- and post-intervention assessments and the satisfaction questionnaire. Descriptive statistics, such as mean, standard deviation (SD),

frequency and percentages, were used to characterise participant demographics and responses to the satisfaction questionnaire. The satisfaction data were treated descriptively to summarise students' perceptions of the content delivered, teaching and learning strategies, technological and digital resources, and overall course recommendation.

For the EPICC Spiritual Care Self-Assessment Tool, inferential analysis, data and effect size calculations were used to compare scores between the intervention and comparison groups, as well as within the intervention group across pre- and post-course measurements.

After validating the principles for applying parametric or non-parametric tests [47, 48], statistical analyses were conducted to assess the effect of the intervention (independent variable). These analyses included a comparison of the effect between the intervention group and the comparison group and the pre- and post-course outcomes within the intervention group. To analyse the data obtained from the instrument scores, the normality of the data distribution was assessed using the Kolmogorov-Smirnov and Shapiro-Wilk normality tests for both the comparison and intervention groups. Additionally, due to the ordinal nature of the data and the small sample size, only non-parametric tests, such as the Mann-Whitney U test and correlation coefficient r (size effect), were used.

Results

Socio-demographic characteristics

The study sample comprised 66 nursing students (IG: $n = 36$; CG: $n = 30$). Among the participants, 82% were female ($n = 54$), and 80% were aged between 18 and 22 years ($n = 53$) (Table 2). The intervention group (IG) had a mean age of 23.6 years ($SD = 6.5$), while the comparison group (CG) had a mean age of 22.7 years ($SD = 4.0$).

Impact effect of EPICC course on students competencies

Pre-intervention – T1

At baseline (T1), normality tests (Kolmogorov-Smirnov and Shapiro-Wilk) were conducted for the comparison and intervention groups (variables from **Q7_1** to **Q13_8**). The significance values (Sig.) for both tests were below 0.05 in all cases, indicating that the distribution of responses did not follow a normal distribution for any variable in either group reinforcing the need to use the non-parametric Mann-Whitney U test. As a result, only four items (**Q7_2**; **Q11_2**; **Q11_4** and **Q11_5**) showed significant differences ($p < 0.05$) between the IG and the CG (Table 3). To complement the data, the effect size of the Mann-Whitney U test was also evaluated and the items - **Q7_3**; **Q9_4**; **Q9_5**; **Q11_5**; **Q11_7**; **Q11_8**; **Q13_5**; **Q13_6** and **Q13_7** - indicate that, even where differences were not statistically significant, some items

Table 2 Socio-demographic characteristics

		Intervention Group (n = 36)		Comparison Group (n = 30)		Total	
		n	%	n	%	n	%
Gender Identity	Female	32	89%	22	73%	54	82%
	Male	3	8%	8	27%	11	17%
	Prefer not to say	1	3%	0	0%	1	2%
Age (years)	18–22	29	81%	24	80%	53	80%
	≥ 23	7	19%	6	20%	13	20%
Age	Mean	23.6		22.7			
	SD	6.5		4.0			

exhibit small practical differences between the groups (Table 3).

Post intervention - T2

Normality tests—Kolmogorov-Smirnov and Shapiro-Wilk—were conducted for the comparison and intervention groups (variables from Q7_1 to Q13_8), and both tests were found below 0.05 in all cases, as it was in baseline. Following this result and the analysis of other assumptions, the researchers opted to use the non-parametric Mann-Whitney U test. The results are presented in Table 3. Only the items Q7_1; Q7_2; Q9_1; Q9_3; Q11_1; Q11_2; Q11_3; Q11_4; Q11_6; Q13_2; Q13_3 and Q13_4 show significant differences ($p < 0.05$) between the IG and the CG (Table 3). As for the effect size of the Mann-Whitney U test the results obtained was: Q7_1; Q7_2; Q9_1; Q9_3; Q11_1; Q11_2; Q11_3; Q13_2 (Table 3). These values indicate that there were considerable differences between the groups for these items, with Q11_1 and Q11_2 showing the largest effect sizes.

Hypothesis verification

Hypothesis verification was conducted using the non-parametric Wilcoxon test. The null hypothesis (H_0) was stating that there is no significant difference in responses before and after the intervention. The alternative hypothesis (H_1) was stating that there is a significant difference in responses before and after the intervention.

The items that showed statistically significant differences between “before” and “after” (p -value < 0.05) were as follows:

- Q7_1 #1. I understand the concept of spirituality.#, Q7_2 #2. I can explain the impact of spirituality on a person's health and well-being across the lifespan for myself and others.#, Q7_3 #3. I understand the impact of my own values and beliefs in providing spiritual care.#, Q7_5 #5. I take care of my own well-being.# e Q7_6 #6. I am willing to explore my own personal, religious, and spiritual beliefs.# (**p-value between $< 0,001$ e $0,046$**);

- Q9_1 #8. I understand the ways that people express their spirituality.#, Q9_3 #10. I recognise the uniqueness of people's spirituality.# e Q9_4 #11. I interact with, and respond sensitively to people's spirituality.# (**p-value between $0,003$ e $0,029$**);
- Q11_1 #13. I understand the concept of spiritual care.#, Q11_2 #14. I am aware of different approaches to spiritual assessment.#, Q11_3 #15. I understand other professionals' roles in providing spiritual care.#, Q11_4 #16. I can conduct and document a spiritual assessment to identify spiritual needs and resources.#, Q11_5 #17. I can collaborate with other professionals in the provision of spiritual care.#, Q11_6 #18. I can appropriately contain and deal with emotions.# e Q11_8 #20. I am willing to deal with emotions.# (**all with $p < 0,001$ or near**);
- Q13_1 #21. I understand the concept of compassion and presence and its importance in spiritual care.#, Q13_2 #22. I know how to respond appropriately to identified spiritual needs and resources.#, Q13_3 #23. I know how to evaluate whether spiritual needs have been met.#, Q13_4 #24. I recognise my personal limitations in spiritual care giving and refer to others as appropriate.#, Q13_5 #25. I evaluate and document personal, professional, and organisational aspects of spiritual care, and reassess appropriately.#, Q13_7 #27. I am willing to collaborate with and refer to others (professional/non-professional) in providing spiritual care.# e Q13_8 #28. I am welcoming and accepting and show empathy, openness, professional humility, and trustworthiness in seeking additional spiritual support.# (**p-value between $< 0,001$ and $0,007$**).

Undergraduate nursing students satisfaction

The satisfaction questionnaire administered to the undergraduate nursing students in this study comprised three major domains: overall student appraisal, evaluation of the course organisation, and assessment and appraisal of the quality of the technological resources that were utilised. The intervention group registered a very high level

Table 3 Synthesis of the impact effect of EPICC course on students competencies

Dimension	Item	Sub-dimension	T1 CG x IC		T2 CG x IC	
			Mann-Whitney U test	Effect size	Mann-Whitney U test	Effect size
Competency 1. INTRAPersonal (within you) spirituality	Q7_1	1. I understand the concept of spirituality.			$p=0.004$	$r=-0.36$
	Q7_2	2. I can explain the impact of spirituality on a person's health and well-being across the lifespan for myself and others.	$p=0.028$		$p=0.001$	$r=-0.42$
	Q7_3	3. I understand the impact of my own values and beliefs in providing spiritual care.		$r=-0.22$		
	Q7_4	4. I reflect meaningfully upon my own values and beliefs and recognise that these may be different from other people's values and beliefs.				
	Q7_5	5. I take care of my own well-being.				
	Q7_6	6. I am willing to explore my own personal, religious, and spiritual beliefs.				
	Q7_7	7. I am open and respectful to people's diverse expressions of spirituality.				
Competency 2. INTERpersonal (related to others) spirituality	Q9_1	8. I understand the ways that people express their spirituality.			$p=0.012$	$r=-0.31$
	Q9_2	9. I am aware of the different world/religious views and how these may impact upon people's responses to key life events.				
	Q9_3	10. I recognise the uniqueness of people's spirituality.			$p=0.004$	$r=-0.35$
	Q9_4	11. I interact with, and respond sensitively to people's spirituality.		$r=-0.11$		
	Q9_5	12. I am trustworthy, approachable, and respectful of people's expressions of spirituality and different world/religious views.		$r=-0.23$		
Competency 3. Spiritual care: assessment and planning	Q11_1	13. I understand the concept of spiritual care.			$p=0.000$	$r=-0.59$
	Q11_2	14. I am aware of different approaches to spiritual assessment.	$p=0.021$		$p=0.000$	$r=-0.56$
	Q11_3	15. I understand other professionals' roles in providing spiritual care.			$p=0.011$	$r=-0.31$
	Q11_4	16. I can conduct and document a spiritual assessment to identify spiritual needs and resources.	$p=0.006$		$p=0.023$	
	Q11_5	17. I can collaborate with other professionals in the provision of spiritual care.	$p=0.000$	$r=-0.15$		
	Q11_6	18. I can appropriately contain and deal with emotions.			$p=0.006$	
	Q11_7	19. I am open, approachable, and non-judgmental.		$r=-0.11$		
	Q11_8	20. I am willing to deal with emotions.		$r=-0.20$		
Competency 4. Spiritual care: intervention and evaluation	Q13_1	21. I understand the concept of compassion and presence and its importance in spiritual care.				
	Q13_2	22. I know how to respond appropriately to identified spiritual needs and resources.			$p=0.001$	$r=-0.40$
	Q13_3	23. I know how to evaluate whether spiritual needs have been met.			$p=0.000$	
	Q13_4	24. I recognise my personal limitations in spiritual care giving and refer to others as appropriate.			$p=0.037$	
	Q13_5	25. I evaluate and document personal, professional, and organisational aspects of spiritual care, and reassess appropriately.		$r=-0.19$		
	Q13_6	26. I show compassion and presence.		$r=-0.08$		
	Q13_7	27. I am willing to collaborate with and refer to others (professional/non-professional) in providing spiritual care.		$r=-0.21$		
	Q13_8	28. I am welcoming and accepting and show empathy, openness, professional humility, and trustworthiness in seeking additional spiritual support.				

of overall satisfaction and a 94.4% recommendation rate for the course.

Evaluation of the course organisation In the evaluation of the course organisation, students were asked to respond questions, see Fig. 1.

Assessment and appraisal of the quality of technological resources Regarding the assessment and appraisal of the quality of the resources utilised in the study, overall, the results obtained from the satisfaction questionnaire in this domain demonstrate that the students were predominantly satisfied or very satisfied with the technology and digital tools utilised in this study (Fig. 2). The significance of using videos during the EPICC course is particularly noteworthy, achieving a high satisfaction rate of 81% ($n = 29$ out of 36 participants).

Discussion

Development of spiritual care competency

When comparing the control group with the intervention group at baseline, only 4 items out of the 28 on the EPICC Spiritual Care Competence Self-Assessment Tool

displayed statistically significant differences, reflecting a greater focus on Competency 3: Spiritual Care: Assessment and Planning. In contrast, following the intervention (Spirituality and Spiritual Care short course), there was an increase in the number of sub-dimensions with statistically significant improvements ($p < 0.05$; $n = 12$) across all four competency of the EPICC Self-Assessment Tool – Competency 1: Intrapersonal Spirituality; Competency 2: Interpersonal Spirituality; Competency 3: Spiritual Care: Assessment and Planning; and Competency 4: Spiritual Care: Intervention and Evaluation. These changes were accompanied by moderate to large effect sizes, highlighting not only statistical significance but also educational relevance in the enhancement of students perceived spiritual care competencies.

Aligned with previous studies on the development of spiritual competencies among nursing students [13, 49], these results reflect an increased perception of competencies 3 and 4. The characteristics of the sample in this study further emphasise the importance of addressing this need within this timeframe, underscoring the relevance of focusing on these specific competencies towards the end of the undergraduate nursing course. As

Course Organisation

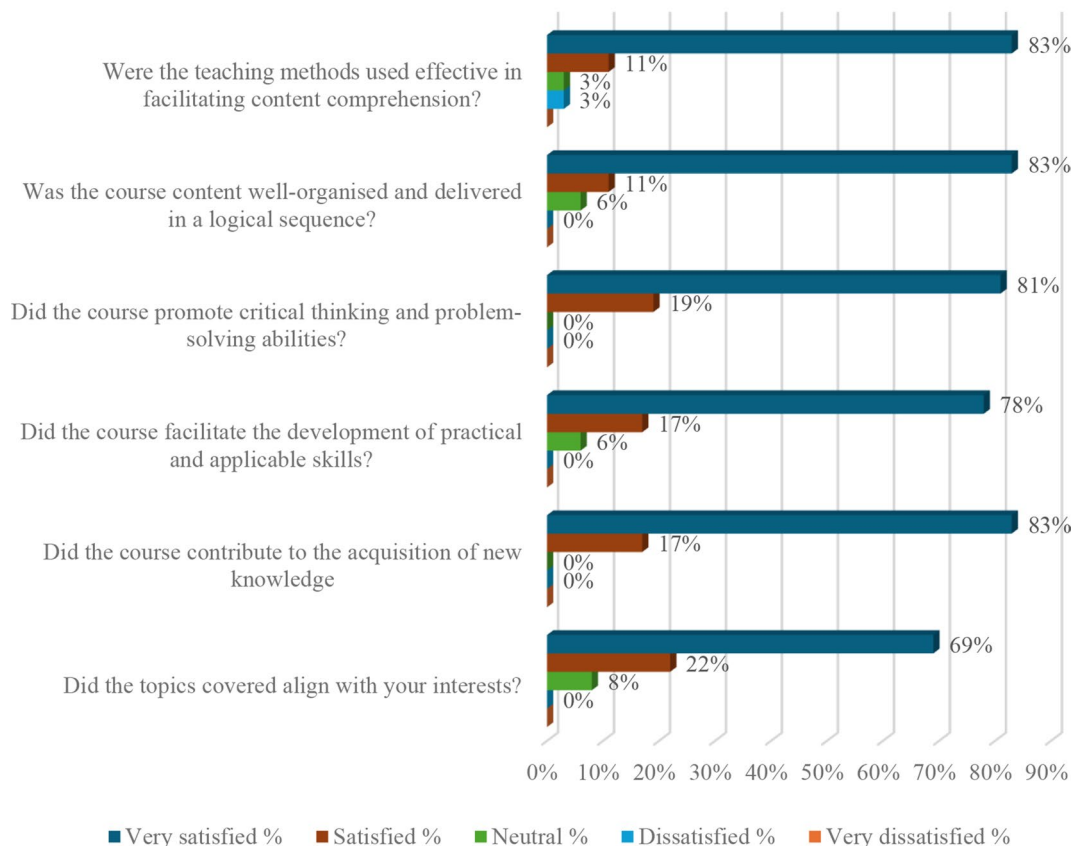


Fig. 1 Graphical representation of the students' questionnaire results regardless of the course organization

Assessment and appraisal of the quality of resources

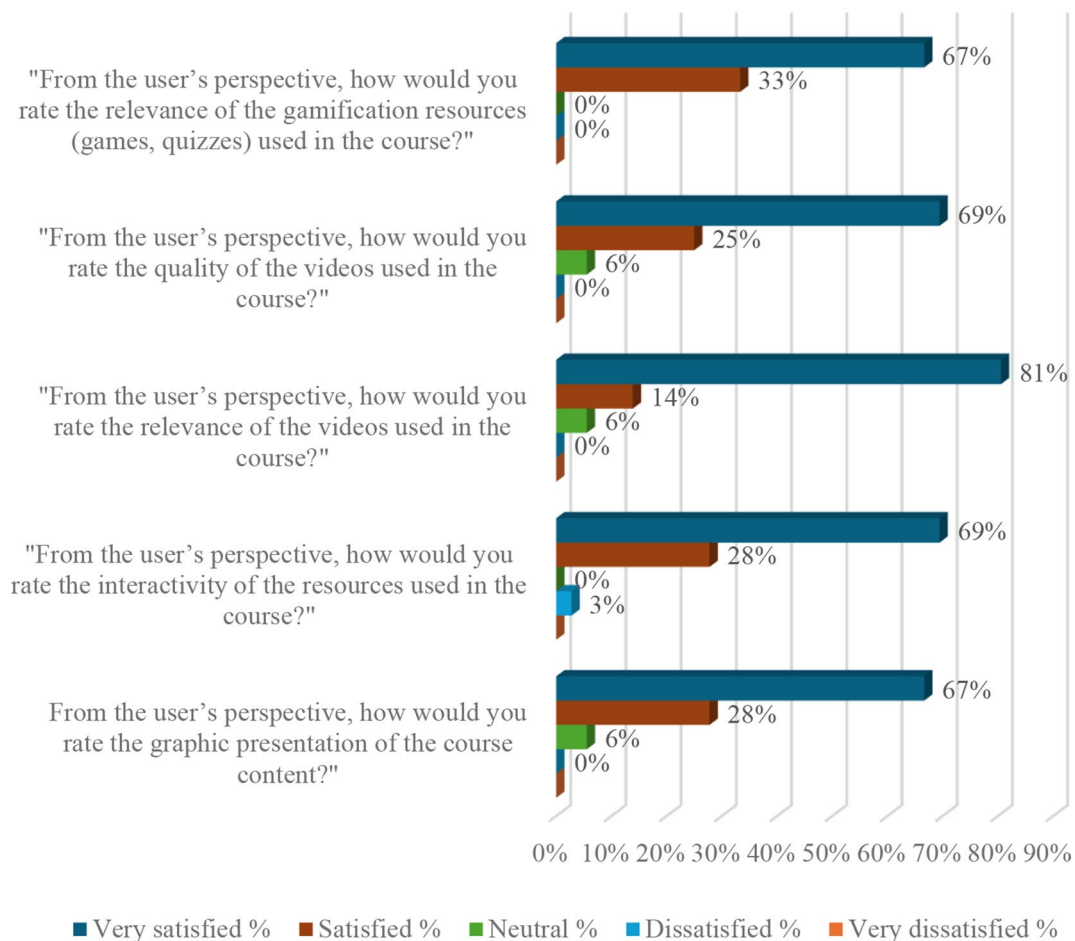


Fig. 2 Graphical representation of the students' questionnaire results regardless of the assessment and appraisal of the quality of the resources that were utilized

students' competencies evolve over time, they increasingly perceive themselves as competent in spiritual care by the conclusion of their education [49], a trend further supported by the notable enhancement observed in the intervention group compared to the control group. The observed effect sizes ranged from moderate to large, reflecting not only statistically reliable changes but also educationally meaningful gains in students perceived spiritual care competencies, thereby reinforcing the imperative to integrate spiritual care education into nursing curricula [29, 42, 50, 51].

Furthermore, a total of 22 out of 28 items significantly improved across all four EPICC competency dimensions, indicating the intervention's broad and meaningful impact on participants' self-perceived spiritual care competencies. These findings underscore the educational value of targeted pedagogical strategies in cultivating core spiritual care skills among undergraduate

nursing students. They further support the integration of structured, competency-based frameworks, such as the EPICC Spiritual Care Education Standard, into nursing curricula to guide and assess students' development in this domain. By doing so, educators can ensure that students are equipped with the necessary competencies to provide holistic, compassionate care that addresses the spiritual needs of patients.

Consistent with previous evidence, spiritual care education has been identified as a key factor in enhancing nurses' capacity to address patients' spiritual needs [40, 51–55]. Educational interventions not only increase spirituality-related knowledge but also foster greater awareness of spiritual coping, enabling more effective and compassionate care. Despite this achievement, some studies continue to underscore inconsistencies in how undergraduate nursing and midwifery students are taught and prepared to assess and address this aspect of

holistic care, particularly regarding how these concepts are integrated into educational programmes [19, 27, 56, 57]. In this context, some nursing students report feeling unprepared to provide care and meet patients' spiritual needs, a challenge that can be overcome through the effective integration of spiritual care education into nursing curricula [29, 32, 37, 50, 57, 58].

An analysis of the significant differences between the two groups and the dimensions of students' spiritual care competencies, as assessed by the instrument, reinforces a strong recognition of the nursing process. The most notable improvements were observed in Competency 3: Spiritual Care: Assessment and Planning, and Competency 4: Spiritual Care: Intervention and Evaluation. These results reflect the importance placed by students on the nursing process as a pivotal role in enabling the delivery of comprehensive care and the ability to directly address and support the spiritual dimension of the individual [59–61], outlining its indispensable importance in evidence-based nursing practice [62].

Spiritual care education & undergraduate curriculum

Spiritual care education needs to be integrated throughout the nursing undergraduate curriculum [15] so that students can improve their awareness, skills and knowledge of the art and science of care. Despite a demonstrated interest among students in acquiring these competencies, several studies indicate that spiritual care remains insufficiently addressed within nursing education programmes [27, 63, 64].

To bridge the transition from the role of nursing student to the nursing professional, a paradigm shift in the education of undergraduate students is essential [65, 66]. Historically, as outlined in Patricia Benner's theory [67], first-year (the novice) students are different from final-year nursing students. As such, teaching and coaching within an active learning environment [68] is required throughout the curriculum to help students develop their knowledge and capacities to address holistic care [69, 70]. Contemporary research further underscores the importance of integrating diverse contextual learning domains into nursing education [71] and "(...) simulation of practice settings can provide replication of predetermined situations where students can demonstrate, not just what they know but what they can do." [65](p.141).

Specifically, evidence suggests that as students progress through the undergraduate degree, the likelihood of assimilating spiritual values essential for providing spiritual nursing care increases significantly [72, 73]. Furthermore, studies have identified spiritual education courses as a pivotal factor in enhancing nurses' ability to provide competent spiritual care [74, 75]. These findings underscore the critical importance of systematically integrating spiritual care education throughout the nursing

curriculum to ensure that students develop these competencies progressively and comprehensively, ultimately aiming to provide compassionate, holistic care and improve patient outcomes. Nevertheless, as this study was conducted with senior students, it raises important considerations regarding the timing of spiritual care education within the curriculum. While the intervention demonstrated notable improvements in self-perceived students' spiritual care competencies, particularly in sub-dimensions aligned with the nursing process - Competency 3: Spiritual Care: Assessment and Planning, and Competency 4: Spiritual Care: Intervention and Evaluation - it also revealed some lower scores in others - Competency 1: Intrapersonal Spirituality, and Competency 2: Interpersonal Spirituality. These outcomes may be influenced by potential confounding factors, including limited prior exposure to spiritual care content and inconsistent curricular emphasis on these dimensions, as acknowledged in the study's limitations. These findings underscore the need for future research, mainly throughout a longitudinal study, to determine the optimal timeframe for incorporating spiritual care education within undergraduate nursing curricula [29] to maximise educational and clinical outcomes.

Technology and digital tools

Incorporating spiritual care education necessitates an emphasis on its integration and a focus on identifying the essential qualities required for effectively teaching and training students in this domain [27, 40, 76, 77]. Moreover, it is crucial to move beyond mere recognition of its importance and equip nursing educators with the tools and resources needed to optimise the development of student competencies [26, 37, 43, 78]. This course adopted a combinatory approach to teaching [43], both in terms of the strategies and resources employed, as well as in its location and timing. Specifically, it comprised a hybrid model, incorporating technology (the website/intranet of the University of South Wales) and digital tools (Videos, Podcast, Kahoot, Mentimeter, Google forms) that supplemented the competency acquisition of the students in this sample.

The use of technology and digital tools in nursing education programmes is becoming increasingly prevalent, as several studies have underscored the benefits of their integration [79, 80]. The same holds true in the field of spiritual care education, where the acquisition of knowledge and the development of spiritual competencies are made more engaging, dynamic, and interactive [52, 81], in line with the generational characteristics of nursing students [82–84]. This is further supported by the following student satisfaction results from those who participated in this study: a very high level of overall satisfaction with the course, at 80.5%; a high level of overall usability

of digital resources, at 77.7%; and a 94.4% recommendation rate for the course.

Additionally, to the study's findings, no significant sociodemographic differences existed between the students in the intervention and control groups. This indicates that the distribution of participants in these groups was comparable and aligned with the sociodemographic profile of nursing students in Portugal [85, 86].

Conclusion

The findings of this study demonstrate a significant improvement in the spiritual competencies of undergraduate nursing students within the context of clinical education (4th-year students at a Portuguese University), achieved through the implementation of an all-day course that integrated the EPICC Spiritual Care Education Standard alongside technology and digital tools. Considering these positive outcomes, it is crucial to incorporate competency-based spiritual care programmes - widely endorsed by the scientific community - into nursing curricula and integrate technology and digital tools as effective learning strategies.

Future research should explore different methods and approaches to explore the short and long-term impacts of competency-based spiritual care education on nursing students, examining how the EPICC Spiritual Care Education Standard integrates clinical practice and patient outcomes. In the short term, studies could evaluate the effectiveness of different pedagogical models, including hybrid, digital, and AI-enhanced simulations, in developing spiritual care competencies among undergraduate and postgraduate nursing students. Exploring educators' perspectives on the implementation and sustainability of these teaching strategies could also provide valuable insights for refining curricula and improving overall outcomes in spiritual care education.

In the longer term, longitudinal studies could investigate the accurate timeframe for developing spiritual competencies among undergraduate nursing students. Studies should investigate how the EPICC Spiritual Care Education Standard translates into clinical practice and influences patient outcomes, thereby providing a comprehensive understanding of its educational and professional impact.

Limitations

Although the study demonstrates a positive impact, some limitations should be considered. First, this quasi-experimental study design, using pre-test and post-test with a non-equivalent control group without the inclusion of randomisation, does not allow for conclusions that would be typical of a true scientific experiment. The research team acknowledges that the non-random allocation of participants may introduce potential confounding

factors, including differences in prior exposure to content, classroom learning environments, and lecturer influence. Nonetheless, efforts were made to minimise these effects by selecting comparable cohorts of fourth-year students who were simultaneously undertaking clinical placements within the same academic programme and following a shared curricular structure. In addition, although the intervention group demonstrated increased self-perceived spiritual care competencies at post-test, the sustained impact of the intervention requires evaluation through long-term follow-up assessments to accurately determine its enduring effect.

Second, although sample size calculations were performed using established methodologies and supported by the Biostatistics Reference and Research Support Service of the Portuguese University, the sample size was relatively small. The slight imbalance in group sizes may have further reduced the statistical power to detect small differences between groups. Therefore, expanding and equalizing the sample in future studies would be advisable to enhance statistical power and minimise the risk of compromising the representativeness and generalisability of the findings.

Third, the data in this study were collected from undergraduate nursing students at a single University in Portugal, which can limit the generalizability of the findings, as cultural, institutional, and curricular differences could influence the transferability of these findings across diverse contexts.

Fourth, the programme content was presented in a language different to the students' native language, which could undermine their comprehension of the intervention used in the course, despite the research team's efforts in providing accurate translation and double validation to mitigate this potential limitation.

Abbreviations

CG	Comparison Group
EAPC	European Association for Palliative Care
EPICC	Enhancing Nurses' and Midwives' Competence in Providing Spiritual Care through Innovative Education and Compassionate Care
ICN	International Council of Nurses
IG	Intervention Group
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization

Supplementary Information

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Supplementary Material 1

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Author contributions

All the authors contributed to the conception and design of the study. Material preparation, data collection and analysis were carried out by SS, AA, IR and SC. The first draft of the manuscript was written by SS and all authors commented on previous versions of the manuscript. All authors have read and approved the final manuscript.

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Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

This study was performed in line with the principles of the Declaration of Helsinki. Permission was obtained from the University of South Wales to use the on-line short course 'Spirituality and Spiritual Care' as the intervention. Also, the Institutional Ethics Committee of Universidade Católica Portuguesa in Lisbon approved the study (code nº 278_CES-UCP; 19.07.2023). Participants were thoroughly informed about the study's purpose and provided signed informed consent. The collected data were categorised, stored, and analysed on the researcher's computer in an anonymous and confidential format using encryption software. Data processing was conducted in collaboration with the University Biostatistics Reference and Research Support Service of Universidade Católica Portuguesa using the SPSS software licensed from the institution. Clinical trial number: not applicable.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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