Educational Intervention for Family Nursing Students in Long-term Cancer

Survivorship: A Randomized Pilot Trial

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Domingo-Osle, M., La Rosa-Salas V., Ulibarri-Ochoa, A., Domenech-Climent, N., Arbea Moreno, L., & Garcia-Vivar, C. (2023). Co-design and validation of a family nursing educational intervention in long-term cancer survivorship using expert judgement. *International Journal of Environmental Research and Public Health, 20*(2), 1571. https://doi.org/10.3390/ijerph20021571

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Abstract

A randomized pilot study was conducted involving 69 third-year nursing students (ClinicalTrials.gov ID: NCT05270252). Students were randomly assigned to the control group (n = 34) or the intervention group (n = 35), using a computer-generated randomization. The control group completed the third-year of the nursing curriculum and the intervention group received an additional Learning & Care Educational Intervention. The aim of this study was to determine the effectiveness, feasibility, and acceptability of the Learning & Care Educational Intervention to help students acquire the knowledge, skills, and attitudes necessary to care for survivors and their families. The intervention group significantly improved in knowledge (p = .004; -1.15, 95% CI -1.94--0.37); skills (p ≤ .0001; -13.51, 95% CI -15.19--11.83); and attitudes (p = .006; -5.61, 95% CI -8.81--2.42). The students' reported high satisfaction with the intervention (93.75%). Offering a family nursing approach improves students' competence to care for long-term cancer survivors and their families.

As a result of the effectiveness of therapies, care, and advances in the early detection and treatment of cancer, there are currently approximately 32.6 million cancer survivors worldwide (Eloranta et al., 2020). In most cases, this progress means that cancer is now a chronic disease (Granek et al., 2017). In this phase of chronic cancer or long survival, many survivors face different types of sequelae including physical sequelae such as fatigue and physical exhaustion, chronic pain, or deterioration of brain function with memory problems; psychological sequelae such as anxiety and sadness or fear of relapse (Padura Blanco & Ulibarri Ochoa, 2021); and socioeconomic and employment consequences as a result of changes in their job or unfair dismissal (Mols et al., 2020; Stone et al., 2017).

Therefore, one of the biggest challenges for most health care systems is providing cancer care in the long-term survivorship phase (Nekhlyudov et al., 2017). As European experts point out, health care systems should address the growing need for long-term follow-up care for cancer survivors to help them achieve a good quality of life, return to work and independent living, and reduce cancer relapse (Lagergren et al., 2019). In addition, comprehensive care should meet the needs of family members who are "secondary survivors" because surviving cancer is a family experience (Cavallar Oriol & Garcia-Vivar, 2019). Survivors' families also experience the effects of cancer and face common issues such as anxiety, depression, and stress (Dorros et al., 2017). However, the families of cancer survivors often do not receive the care they need (Konradsen et al., 2020). The needs of family members during the long-term survivorship period are complex as they diverge with the patient's survival trajectory (Kim et al., 2019). The period outside of acute care, in particular, has been identified as a time when the patient's needs are often not addressed and even less consideration is given to the tasks and needs of the family members (Tolbert et al., 2018). Currently,

few countries have implemented long-term cancer survivorship care plans and survivorship care needs to be better managed, with nurses playing a key role in the design, delivery, follow-up, and coordination of these plans (Elizondo Rodriguez et al., 2022). Care must also include the family of the long-term cancer survivor as recommended by the American Society of Clinical Oncology (2017).

Family nursing assesses and intervenes in the patient's family relationships and the impact of the patient's disease on the family unit (Duhamel, 2017). For optimal physical and emotional management of cancer, family support is beneficial as family members play a key role in caring for their ill loved one (Badr et al., 2016). For this reason, it is beneficial to offer family nursing assessment and intervention when caring for families after a cancer diagnosis. It is not easy to integrate family nursing into clinical practice; research has shown there is an initial impetus to implement family health care in nursing practice, but over time, nurses begin to falter, and become resistant when they encounter resistance in their hospital departments (Naef et al., 2020). One of the barriers to implementing family health care in the current clinical setting is the lack of basic and ongoing family nursing education (Holtslander et al., 2013). This is reflected in a study conducted in the critical care setting where nurses identified barriers to communicating with families and felt the need for basic communication training to be able to care for the family unit (Adams et al., 2015).

Nursing students, as future professionals, may not have the opportunity to acquire the knowledge, skills and attitudes needed to care for patients and families living with cancer and beyond. Therefore, nursing education should provide students with the opportunity to learn to assess and care for families living with a chronic disease, such as cancer, and to integrate this experience into their future clinical practice (Gutiérrez-Alemán et al., 2021; Holtslander et al., 2013).

The implementation of educational strategies that facilitate the acquisition of skills to provide care at the different stages of cancer are needed (European Oncology Nursing Society (EONS), 2018). Generalist nurses with competencies in family nursing should be educated about how to engage and connect with families, promote family health, and alleviate illness suffering (International Family Nurse Association (IFNA), 2013). A recent study reported the results of a pilot educational project focused on nursing students (n = 38) and graduates (n=17) regarding their knowledge and attitudes toward cancer survivorship care (Altre & Chou, 2022). Only 11% of undergraduate students and 18% of graduate students reported being aware of survivorship care, although all participants believed that early nursing education should include survivorship care.

However, there is scant evidence about educational interventions in cancer survivorship directed at undergraduate nursing students. In addition, as Meiers and colleagues (2018) noted, there is a lack of curricular and teaching models that address nursing practice with families. Thus, there is a need to design and evaluate innovative educational interventions that improve undergraduate students' knowledge, skills, and attitudes related to family nursing in long-term cancer survivorship. These interventions might be best explored by developing pilot studies in preparation for definitive randomized controlled trials to evaluate the impact of the family nursing interventions (Eldridge et al., 2016).

The purpose of the study was to determine the effectiveness, feasibility, and acceptability of an educational intervention that focused on helping student nurses to acquire the knowledge, skills, and attitudes for caring for long-term cancer survivors and their families.

Methods

Trial Design

This randomized pilot trial used the UK Medical Research Council (MRC) complex intervention framework (Craig et al., 2019). The MRC has four phases: Development (phase I); Feasibility/Piloting (phase II); Implementation (phase III); and Evaluation (phase IV). This study was consistent with Phase I and II of the MRC framework for developing and evaluating clinical trials of complex interventions (Craig et al., 2019). The intervention in this study was complex because it involved diverse participants, including healthcare professionals, long-term cancer survivors, and family members. In addition, the intervention was dynamic and used a variety of educational methods.

Participants

The study participants were third-year nursing students pursuing a four-year bachelor of science degree in nursing at the University of Navarra in Spain. The inclusion criterion was third-year nursing students who volunteered to participate in the study, and the exclusion criteria were (1) first- and second-year nursing students because they had not yet participated in clinical practice, and (2) fourth-year nursing students because they were in their clinical practice phase outside the city from where the university was located.

The Learning & Care Intervention

The educational intervention was named "Learning & Care" and was developed based on two theoretical frameworks: a) the European Higher Education Area Framework, which proposes a student-centred education model that promotes students' motivation and active participation in their learning process (Coelho & Menezes, 2021); and 2) the Calgary Family Assessment and Intervention Models (Wright and Leahey, 2013). The research team designed an educational intervention based on the literature

review, which was then evaluated by a multidisciplinary panel of experts (see Figure 1). The experts co-designed and validated the educational intervention for family nursing in long-term cancer survivorship (Domingo-Osle et al., 2023), which had the following goals: (1) raise awareness of the needs of long-term cancer survivors and their families; (2) become familiar with the features of the Calgary Family Assessment and Intervention Models family interview (Wright and Leahey, 2013); (3) acquire the ability to conduct a 15-minute Calgary Family Assessment Model family interview; (4) promote a caring attitude that focuses on the cancer survivor and his or her family; and (5) promote an attitude toward interdisciplinary work that promotes caring for cancer survivors and their family.

The expert panel consisted of five nurses from different specialties (primary care, hospital oncology, cancer survivorship research, and university nursing education), a medical oncologist, a psycho-oncologist, a pharmacist, a student, a cancer survivor, and a family member of a survivor. The expert panel considered it appropriate for the intervention to be delivered by an interdisciplinary team (Domingo-Osle et al., 2023). This decision was based on the argument that quality cancer care requires professionals working collaboratively and making shared decisions (James et al., 2016). However, interprofessional practice in cancer care is complex and there are obstacles to overcome to effectively implement interprofessional collaboration (Kurniasih et al., 2022).

[insert Figure 1 about here]

The Learning & Care intervention lasted ten hours: six hours of face-to-face instruction and four hours of student self-study. Methods such as flipped classroom and simulation were deemed appropriate for the delivery of the knowledge because for learning to be meaningful, the learning experience should include active educational methods, promote shared decision-making, and support the development of

communication skills within the interdisciplinary team (Domingo-Osle et al., 2021).

Cancer patients and their families should also be involved in the educational experience

to give learners first-hand insight into patients' and their families' needs and bridge the

gap between theory and clinical practice (Edwards et al., 2016). The roundtable gave

students the opportunity to have this direct contact.

The first educational method used in the intervention was a **"flipped**

classroom" conducted by the principal investigator, a nurse educated in family nursing.

To allow all the students involved in the intervention to attend, two 60-minute sessions

were held in a university classroom, at different times. Students were emailed

educational materials for their self-study: three articles on the needs of cancer survivors'

families, the family care framework, and the Family Interview used by the Calgary

Model for Family Assessment and Intervention (Wright & Leahey, 2013). Along with

the articles, five experiential videos selected from YouTube were used to depict the

experience of cancer survivors and families in the long-term survivorship phase. In the

classroom, the lecturer supported active student participation to encourage self-learning,

reflection, and enriching discussion among participants. The classroom whiteboard and

coloured sticky paper were used as tools. Students created genograms and ecomaps,

wrote down key needs of cancer survivors and their family members, and identified

nursing interventions and activities to meet the families' needs.

The second teaching method was a "**round table**" that included an advanced

oncology nurse practitioner, a medical oncologist, a breast cancer survivor, and a family

member of a colorectal cancer survivor. The session was held in a comfortable

classroom that allowed for relaxed dialogue between students and speakers. The

presentations focused on the care of cancer survivors and their families from an

interdisciplinary approach. After each speaker had given a 10-minute presentation, the

speakers and students engaged in a 60-minute discussion moderated by the principal investigator, and at the end of the round table, students were encouraged to reflect individually by answering two questions sent to their electronic devices. The questions were: "After participating in this roundtable, how can you further your education to improve interdisciplinary work for comprehensive care of long-term cancer survivors and their families? and "What competencies do you think are most important for family nursing in long-term cancer survivorship, and how can you best develop these competencies?" Responses were anonymous, were not evaluated, and were intended to facilitate student reflection.

The third teaching method was **clinical simulation**, which was conducted at the simulation center at the School of Nursing, University of Navarra. Due to the COVID-19 pandemic, the simulation could not be performed with real patients and family members (as originally planned), but was instead conducted with a standardized patient and a family member (trained to play the role of a cancer survivor and family member). The clinical simulation scenario was conducted 11 times, both in morning and afternoon, so that students could enrol in the group that best suited them. Following recommendations on the importance of debriefing in small groups to help students feel safe (Aamlid & Tveit, 2022; Tosterud et al., 2014), it was decided to perform the clinical simulation individually and debrief in groups of only three students to promote learning and the development of clinical skills for assessing and intervening with families.

In the clinical simulation, a scenario was replicated to familiarize students with counselling a long-term cancer survivor and her family member in a primary care setting. All students performed the simulation and observed the simulations of their two fellow group students. One week prior to the simulation, students were emailed the

following material for their personal work prior to the simulation: (1) the summary of the clinical case developed for this research (middle-aged woman, long-term survivor of colorectal cancer with a colostomy, who attended the primary care consultation); and (2) a video of the 15-minute family interview prepared for this project by a family nursing expert and a team researcher.

The clinical simulation included the following phases: (1) a 90-minute pre-simulation briefing, during which participants received more detailed information about the clinical case and were briefed about the setting in which the simulation would take place; (2) a 15-minute simulation of a family interview with cancer survivors and their families (Ruiz-Moral & Caballero-Martínez, 2014); and, (3) a 60-minute debriefing session designed to promote conscious and intentional reflection by each student and to build deep learning based on the previously established objective.

Engagement with the Learning & Care project was facilitated by giving students an email address through which they could contact the principal investigator if unforeseen circumstances prevented them from attending any of the training sessions. In addition, during the study, the principal investigator kept a detailed diary of the session dates and duration, incidents during the training and personal reflections. Another member of the research team was present at all times with the principal investigator. No evaluation instrument was used, but the team checked in advance that everything was prepared correctly and that the agreed participants attended.

The Intervention Group (IG) received the Learning & Care intervention, including clinical simulation based on family nursing care for long-term cancer survivors and their families. In contrast, the Control Group (CG) only participated in a simulation based on standard education about chronic disease care and the importance of nurse-patient communication. That is, the standard education for third-year students (CG) does not address family nursing or the needs of cancer survivors and their families. However, two weeks after the end of the research project, all the CG students were contacted by email and given the opportunity to complete the *Learning & Care* educational intervention.

Outcomes

Before and after the Learning & Care intervention, data on students´ knowledge, skill, and attitude toward family nursing care in cancer survivorship (primary outcomes) was collected in the control group and in the intervention group. Finally, after the educational intervention, data on student satisfaction (secondary outcome) was collected in both groups (IG and CG) using the online platform Google Form with a tablet.

[Insert Table 1 about here]

To determine students' level of knowledge about the needs of long-term cancer survivors and their families, family nursing and the 15-minute Calgary Model Family Interview (Assessment and Intervention), an *ad hoc* test with 20 multiple-choice questions was administered (Supplementary file). All the questions were asked in the same order to all participants in both the pre- and post-test. Each correct answer was counted as one point. No minimum score was considered for knowledge and no marks were deducted for errors in the answers. The test was piloted by team members and a student to check their understanding and to identify possible errors in the multiple-choice answers. Minor changes related to the format were considered.

Students' skills were assessed using the Van Gelderen Family-Care Rubric scale (Van Gelderen et al., 2019), which is used internationally and is a reliable and valid simulation-based instrument for assessing family-care and communication skills in nursing students. The Van Gelderen Family-Care Rubric scale includes 12 family-care constructs measured on a 1-to-3-point scale and divides items into two domains: communication with family and family as client. A maximum of 18 points can be scored in each domain, resulting in a total score of 36. Psychometric results showed that 11 of the 12 constructs were statistically significant ($p = .05$). In general, the reliability of the Van Gelderen Family-Care Rubric scale was determined with a Fleiss Kappa significance of $p = .05$ at the 95% confidence interval (CI) and a Cronbach's α of .842 (Van Gelderen et al., 2019). This scale is available in English, so permission was requested from the lead author to translate it into Spanish for use in this study. For linguistic-cultural adaptation, direct and inverse translation (Bracken & Barona, 1991) was used because this double translation system is recommended to avoid discrepancies between the original and translated versions. After completion of the double translation, the Spanish version of the scale was approved by the author of the scale (supplementary file).

Attitudes were assessed with the Importance of Families' in Nursing Care-Nurses' Attitudes Scale (Barreto et al., 2022), which has been widely used to measure nurses' attitudes about the importance of involving families in nursing care. The scale consists of 26 items with scores ranging from 1 to 4 (strongly disagree, disagree, agree, and strongly agree), divided into four subscales: (1) family as a nursing care resource, (2) family as a conversation partner, (3) family as a burden and (4) family as a resource. To calculate the "family as a burden" group, the data were inverted (Hagedoorn et al., 2020). The total score of the attitude scale was 104 points. This scale was validated in

Spanish in a sample of 274 professionals and yielded an overall Cronbach's α coefficient of .864 for the total scale, with values ranging from .888 to .769 for subscales. Factor analysis identified four factors that explained 54.22% of the total variance (Pascual Fernandez et al., 2015).

The secondary outcome, i.e., student satisfaction (CG and IG) with the *Learning & Care* intervention, was assessed using the Client Satisfaction Questionnaire (Echeburua & Corral, 2010). This eight-item questionnaire has been validated in Spanish and has very high internal consistency, according to Cronbach's α coefficients, which range from .83 to .93 (Echeburua & Corral, 2010; Martinez-Azurmenti & Beitia Fernandez, 2014).

Prior to beginning the Learning & Care intervention with the IG, CG and IG students signed the informed consent form and underwent a pre-assessment of their knowledge, skills and attitudes. Students were informed that they would be assessed using the instruments described above to determine know their level of training. Thus, all students completed the knowledge test, a simulation (without debriefing) and responded to the FINC-NA scale. When the IG completed the educational intervention, all students (IG and CG) underwent a post-assessment, identical to the pre-assessment. Students were sent a doodle which they could use to sign up at their convenience. Students participated as if it were just another project activity.

Recruitment

Permission to conduct the study was sought from the nursing faculty and the Associate Dean for Students approved it in December 2020. Students were recruited from January 19 to February 7, 2021. The principal investigator presented the project in the classroom to the third-year nursing students in a brief oral presentation supported by a specially developed video designed to encourage students to participate, and which

consisted of images of long-term cancer survivors and their families, music, and information about the project. Students who wanted to participate scanned a QR code that allowed them to request information, provide a contact email address, and select the course.

Students who requested information and met the inclusion criteria received a project information sheet and a Doodle form to sign up to attend the first session.

Students responded positively and quickly after learning about the project. Two days before attending a recall session, 90% of the students who participated in the project had already signed up. Despite the positive response to the study, three recall sessions were held with 69 participants. Students who had not participated in the study due to lack of time, excessive course load and curricular practices (n = 66) showed interest in participating in the project at another time. In addition, new applications were received during the study from students (n = 7) who expressed an interest in the project.

Sample Size

The sample size was estimated to be at least 58 participants (29 participants per group) based on the variable of skills, and on the following parameters: an effect size of 0.8 with a statistical power of 80%, considering a two-tailed hypothesis test and a significance level of 5%, and assuming a potential loss rate of 10%. We also considered the recommendations of García-García and colleagues (2013) who recommended a sample size of 30-50 participants for pilot medical education studies.

Randomization

Students were randomly allocated to the control (n = 34) or intervention (n = 35) group, using a computer-generated random allocation method (see Figure 1). The randomization process was conducted by a statistical consultant and no one directly involved in the project had access to the allocation codes.

Blinding

Participants were not told which group they had been allocated to. Blinding was maintained for participants in the educational intervention; the students were informed that the educational intervention would take place in small groups and that they would gradually receive an invitation. In addition, there was no inter-participant contamination, as the students knew that they would complete the intervention as they went along and that they could not withhold learning from their classmates. There was no blinding of the project researchers.

Data Analysis

Quantitative variables were described using the mean and standard deviation and qualitative variables were described by percentages. Normality of variables was tested using the Shapiro–Wilk test. To estimate the effect of the *Learning & Care* intervention, groups were compared using Student's t-test and the Mann–Whitney U-test. Statistical significance level was set at $p < .05$. The statistical programme used was Stata 14 (StataCorp. 2015. Stata Statistical Software: Release 14. College Station, TX: StataCorp LP).

Ethical Considerations

This study was conducted in accordance with the Declaration of Helsinki and was approved by the Ethics Committee of the University of Navarra (REF. 2020.161). Written informed consent was obtained from all students (intervention and control groups) before the start of data collection.

Results

Study Population

Figure 2 shows the flowchart used to assess the study participants. Of the total 134 students invited to participate in the study, 84 students chose to participate. Of these

84 students, 12 did not sign an informed consent form, and three did not meet the inclusion criteria, because they were first-year students, leaving a total of 69 students who met the inclusion criteria. They were randomly assigned to the intervention group (n = 35) or the control group (n = 34). Of the intervention group, 32 subjects completed the intervention protocol, while three subjects did not attend one or two of their appointments with the researcher during follow-up and did not complete the intervention programme. Of the 69 subjects who participated in the trial, 61 (90%) completed the 3-month follow-up. The remaining eight students were lost to follow-up (three in the intervention group and five in the control group).

[insert Figure 2 about here]

Baseline Data

Data collection occurred from February to April 2021 and sociodemographic information of all participants (IG and CG) was collected only at the beginning of the study using a questionnaire developed by the researchers that included variables such as age, gender, previous study of a degree programme other than nursing, course or previous family education, and work experience in health care.

[Insert Table 2 about here]

Outcomes Variables

No statistically significant differences were found between the two groups in terms of demographic characteristics (p >.005). The mean age of the students was 20, which is the age of third year students of the nursing programme at the participating university. Most of the students were female (95%); there was only one male in the intervention group and two in the control group. No one in the intervention group had earned another degree or worked as a health care worker, whereas two students in the control group had. Both groups included students who had taken an elective course on

family as part of their studies, 28% in the IG and 27% in the CG. Table 3 shows the average pre- and post-intervention test scores for the two groups.

Knowledge, Skills, and Attitudes at Baseline [check levels of headings]

At baseline, participants' knowledge in both the control and intervention groups averaged 12.97 (p >.994). Skills were also similar in both groups, with a mean of 18.24 in the control group and 18.56 in the intervention group (p >.721). The attitude of the control group had a mean of 91.62 and that of the intervention group 92.63 (p >.602). This suggests that before the intervention, there was no statistically significant difference in knowledge, skills, or attitudes between participants in the control group and the intervention group.

However, after the intervention, the analysis results showed statistically significant differences in all knowledge, skill, and attitude scores in favour of the IG participants. For knowledge, there was a mean difference of -1.15 (95% CI: -1.94–-0.37) with a significance of p <.004; for skills, the mean difference was -13.51 (95% CI: -15.19–-11.83) with a significance of p < .001, and finally, in the attitude the difference in means was -5.61 (95% CI: -8.81-(-2.42)) with a significance of p <.006 (see Table 3).

Knowledge in Post-Intervention

In terms of knowledge, there was a smaller difference between control group and intervention group students after the intervention. Nevertheless, the knowledge level of the intervention group students was higher than that of the control group students; the control group student scored an average of 14/20, compared to 15/20 points of the intervention group students. This difference was statistically significant (-1.15, 95% CI: -1.94–-0.37, p = .004).

Skills in Post-Intervention

Skills increased significantly in intervention group students compared to control group students with a mean difference of -13.51 (95% CI: -15.19–-11.83, p ≤ .001); while intervention group students improved by 16 points, control group students scored only three points above baseline. After analyzing the different skill components at baseline, no statistically significant differences could be found in the ability to communicate with the family or the ability to communicate with the family as client (p = .483; p = .494), respectively. However, at baseline, it was observed that both groups were better at communicating with the family than with the family as client (control group = 10.79 and intervention group = 10.44; control group = 7.45 and intervention group =8.12). This difference remained after the intervention in the intervention group, which showed a nine-point improvement in the ability to communicate with the family as a client and a seven-point improvement in the ability to communicate with the family. The control group, on the other hand, improved both skills by two points (see Table 3).

[insert Table 3 about here]

Attitudes in Post-Intervention

At baseline, the *attitude* scores were very high (ceiling effect), and the mean scores of the intervention group and control group were 92.63 SD (± 6.86) and 91.62 SD (± 8.1) respectively, out of a maximum of 104 points. This illustrates the limited room for improvement on this variable. Nevertheless, there was a statistically significant difference of five points between the attitudes of students in the intervention group and the control group (p <.006). This improved attitude is more evident in the intervention group when considering the attitude of students who view the family as another nursing care resource, with a mean of 45.16 SD (± 2.72) compared to the control group, with a mean of 42.97 SD (± 3.85) (p = .018); when the family is

considered a burden, the control group's mean is 12.07 SD (± 3.06) compared to the intervention group's mean of 14.25 SD (± 1.97) (p = .002). However, there were no differences between groups in the ratings of family as a dialogue partner and as a resource (p = .142; p = .659).

Satisfaction in Post-Intervention

The Client Satisfaction Questionnaire (Echeburua & Corral, 2010), used to assess student satisfaction with the intervention, showed that 93.75% of intervention group students were very satisfied with the programme and the remaining 6.25% were satisfied, indicating that IG students were satisfied with the programme. Regarding quality, 90.62% of IG students thought the programme was very good. They also said that the programme had helped them to improve their clinical practice (93.75%) and that it covered almost all their needs (96.87%). IG students expected this type of educational intervention (90.62%), and if they had a choice, they would choose the programme again and would not hesitate to recommend it to a friend (87.5%) (see Table 4).

[insert Table 4 about here]

Discussion

The results of this randomized pilot study demonstrate that the novel *Learning & Care* intervention, developed by the research team and co-designed and validated by an interdisciplinary panel of experts and taught by an interdisciplinary team improved the knowledge, skills, and attitudes of nursing students' regarding the care of long-term cancer survivors and their families. To our knowledge, this is the first educational intervention designed to educate nursing students in family nursing of cancer long-term survivors.

The *Learning & Care* intervention enabled nursing students to learn about the physical, psychological, and socio-occupational needs of long-term cancer survivors

and their families and to acquire skills in family assessment and intervention through family interviews. Similarly, the intervention promoted positive attitudes towards survivor and family care, which is critical to improving patient and family satisfaction with nursing care (Gervais et al., 2020). To facilitate student learning, the *Learning & Care* intervention combined active teaching methods, following Domingo-Osle et al. (2021) and the recommendations on teaching methods used in cancer education for health sciences students. In addition, blended learning (the combination of online and face-to-face instruction in flipped classroom and clinical simulation) and the use of different methods is becoming the new standard of quality in nursing education, as it is considered the best way to increase student engagement, promote meaningful learning and improve overall satisfaction with the education received (Leidl et al., 2020).

Developing Students' Knowledge, Skills, and Attitudes in Family Nursing for Long-term Cancer Survivorship

In this study, intervention group students improved their learning (knowledge, skills and attitudes), with a statistically significant improvement in knowledge ($p < .004$). It is believed that the flipped classroom method helped students to manage their conceptual learning and improve their independent study through videos, narratives, and reading research articles. This didactic method could promote reflective and dynamic learning to improve the knowledge level of students in the intervention group. A previous study with medical students also found that the flipped classroom integrated knowledge in an interactive, compelling and attractive format (Morgan et al., 2015).

When conducting the clinical simulation scenario, the intervention group students demonstrated better skills in conducting the 15-minute family interview ($p < .001$), increasing their baseline scores by 16 points over a range of 0 to 32. This improvement may be due to the use of simulation as a teaching method, as simulation

experiences are so powerful that they can alter prior learning (Meiers et al., 2018). In addition, the debriefing was conducted using the Van Gelderen Family-Care Rubric (Van Gelderen et al., 2016). This scale, which is specific to simulations with families (no other scales have been used in simulations with families to date), allowed us to objectify skill development and capture specific aspects of the skill covered in the scale items (e.g., positioning, questioning style). After consultation with the author, the Van Gelderen Family-Care Rubric scale, originally used for training purposes, was also used for evaluation in this study. This helped to evaluate the effectiveness of the educational intervention developed in this study, as nurse-patient communication is a difficult topic to objectify (Kerr et al., 2020), and there are no standardized measurement tools. Therefore, it seems important to recommend the use of this scale in future studies for both evaluation and educational purposes.

The *Learning & Care* intervention also aimed to promote positive attitudes through the use of a combination of educational methods. Listening to the experiences of survivors and their families at the roundtable and then engaging in dialogue allowed the students to better understand the survivors' needs and become more sensitive towards them. This has also been observed in other studies, in which a roundtable with survivors was organised that helped the students develop more empathy in their clinical practice (Fitch et al., 2011). To work on students´ attitudes, the Granek et al. (2017) study on early exposure to a clinical oncology course during the preclinical second year of medical school recommended performing a simulation with real patients to promote more positive attitudes towards patients (Granek et al., 2017). However, in our intervention, due to the COVID-19 pandemic, the simulation was conducted with standardised patients and positive results were obtained. For future educational interventions, a two-arm randomised controlled trial comparing real-patient simulation

and standardised-patient simulation would show how students' attitudes are affected by each method.

In education, the right attitude helps to arouse students' interest and maintain their motivation; both are very important for the teaching-learning process (Yesenia & Loya, 2021). However, measuring attitude was not easy because there are no specific scales in the literature for measuring students' attitudes towards family care. The Families' Importance in Nursing Care-Nurses' Attitudes scale (FINC-NA) has been increasingly used in clinical practice (Blöndal et al., 2014; Broekema et al., 2018; Naef et al., 2020; Svavarsdottir et al., 2015) but not so much with students. To our knowledge, it has only been used in one study of family integration in nursing care that was conducted among undergraduate and graduate students (da Garcia Frade et al., 2021). Additionally, when FINC-NA is used, attitudes are usually found to be very high (ceiling effect) because nurses believe that it is not appropriate to answer questions in a way that denies the importance of families in care (Saveman et al., 2011). This was also observed in this study, where students' attitudes towards cancer survivors and their families was very positive before the intervention, and increased by five points after the intervention, which was considered statistically significant. Despite the possible ceiling effect often noted with the use of this scale, its use in clinical practice for nurses and nursing students continues to be recommended as it promotes self-reflection and allows for some improvement (Barreto et al., 2022).

Need for Student Education in Family Nursing and Long-term Cancer Survivorship

This study demonstrated that students positively received Wright & Leahey's (2013) 15-Minute Family Interview as a useful tool for assessment and intervention with the family of long-term cancer survivors. The family interview has been used in

various areas of nursing practice to promote family care through the assessment of family structure, communication, and family functioning (Holtslander et al., 2013). Therefore, learning the 15-Minute Family Interview will help students and future nurses promote family nursing in their clinical practice. In our study, the family interview was simulated, so that students could develop the ability to conduct a family interview in novel situations, such as the case of a long-term cancer survivor. Other studies have also used the 15-minute family interview to promote the teaching of clinical reasoning and decision-making skills in clinical nursing practice (Eggenberger et al., 2015; Johnsen et al., 2016). Clinical case simulation also allowed students to develop communication skills by asking survivors and their families open-ended and circular questions (Coyne et al., 2018). Broekema (2020) reported that some components of the family interview are easier to conduct than others. Explicit attention to clinical reasoning and decision-making in family interviewing should be part of nursing education so that nurses know how to adapt their interventions to the family's situation (Broekema et al., 2020). Therefore, when educating nurses to conduct a family interview, these two key elements should be considered so that future professionals can adapt family interventions to each family's needs.

Following the National Cancer Institute's guidelines on research priorities in cancer survivor nursing (Gallicchio et al., 2021), this study demonstrates the importance of educating future nurses on long-term cancer survival. Beginning learning with educational interventions such as those conducted in this study is the first step to helping cancer survivors and their families alleviate their suffering from the physical and psychosocial long-term effects of cancer and its treatment (Gallicchio et al., 2021). Nurses should recognize that families may need support once treatment is completed (Clemente García, 2018). Therefore, education for undergraduate nursing students and

continuing education for nurses is needed to improve the knowledge and skills of cancer follow-up nursing (Gallicchio et al., 2021). What cancer survivors and family members mainly fear is a relapse or other chronic diseases (Clemente García, 2018), so education in this aspect will allow early diagnosis of cancer relapse and meet the needs of these families.

Applicability for Future Studies

We hope that the Learning & Care intervention described in this publication will serve as a model for future educational interventions in family nursing in other settings and health contexts.

Our recommendation regarding student recruitment is to conduct face-to-face and/or audio-visual sessions, and telephone reminders as others have recommended (Treweek et al., 2018) in addition to using WhatsApp or the communication platforms most commonly used by students. Finally, candidate retention can be improved by using Doodle forms to make it easier for students to register for sessions, and by planning sessions in small groups and outside of exam periods.

In terms of feasibility, delivering the educational intervention implemented in this study was time-consuming for the researchers, and sufficient resources should be allocated in future studies. For example, the clinical simulation debriefing should be conducted in small groups, but of five to eight students, rather than the three-student groups used in this study.

Nursing education should provide students with tools to develop their critical-reflective thinking that will enable them in their future clinical practice to offer comprehensive care to long-term cancer survivors and their families (Vega Flores et al., 2021). Like O'Connell & Kaur (2020), we believe there is a need to support research in family nursing education to improve cancer treatment.

Implications for the Course of the Study

Education of students in family nursing is critical and highly appropriate for the long-term cancer survivor population. Most of students in this study said they had a family member, close friend, or cancer patient they would like to help. Students suggested learning more about long cancer survival and caring for family members. Additionally, they stated that talking about longevity is hopeful and ground breaking. They found the simulation scenarios to be a great challenge as they had never done a family simulation before. All of this led to the students being involved in the *Learning & Care Intervention* and being very satisfied with the educational intervention.

In any future research evaluating the effectiveness of an educational intervention such as that used in this study, clinical simulation should be conducted with survivors and family members rather than simulated patients and family members. We also recommend that, after completing the family clinical simulation, students conduct a 15-minute family interview in a natural clinical practice setting (in a hospital, health centre or at home) to reinforce learning in a real-world setting.

Limitations

This study has several limitations. First, the *Learning & Care Intervention* only lasted three months, so no conclusions can be drawn about the long-term effects of the intervention. However, as a pilot study, it met the goal of determining effectiveness, feasibility, and acceptability. Second, the intervention focused on theoretical and practical learning with simulated patients and families and was not conducted in a clinical practice setting, so our study focused on phases I and II of the MRC. Therefore, the results may not accurately reflect the knowledge, skills, and attitudes that students actually acquired. The two subsequent MRC phases, implementation (phase III) and evaluation (phase IV), need to be conducted to assess the effectiveness of the *Learning*

& Care Intervention in clinical practice with long-term cancer survivors and their families. Third, the multiple-choice test used in this study to assess knowledge has not yet been validated. Consistent with other authors (Padilha et al., 2019), we believe that the ad-hoc instrument used in this study was acceptable. However, we recommend psychometric validation of the multiple-choice knowledge assessment test whenever possible. Fourth, the VGFCR scale should be validated in Spanish to assess student attitudes in clinical family simulations, and the FINC-NA scale should be adapted and validated for the student population. Finally, although blinding was maintained thanks to the collaboration of the students, it is possible that there was some contamination by comments shared among the students.

Conclusion

This findings of this study report the effectiveness of an educational intervention, Learning & Care, which seeks to empower undergraduate nursing students to care for long-term cancer survivors and their families. The MRC methodological framework and the family nursing theoretical framework (Calgary Family Assessment and Intervention Models) were used to design this complex educational intervention. In addition, the intervention was validated by an interdisciplinary team composed of: (a) those involved in the care (the interdisciplinary health team); (b) the recipients of the care (family and long-term cancer survivors); and (c) the recipients of the education (students). Several methodologies were used for implementation such as a simulation of a 15-minute Family Interview with the cancer long-term patient's family members. The educational intervention allowed the students, through reflective practice, to: (a) increase their knowledge; (b) develop their skills; and, (c) enhance their attitudes towards family centred patient care. This study reinforces the IFNA Position Statement on Pre-Licensure Family Nursing Education (2013) on the relevance of family-centred

nursing care during undergraduate studies. The study also advocates the progressive incorporation of family-centred nursing care for long-term cancer patients into the nursing curriculum. This curriculum extension will ensure that future professionals care for patients in their clinical practice with authentic family-centred nursing care.

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Figure 1.

Design of the Learning & Care Educational Intervention
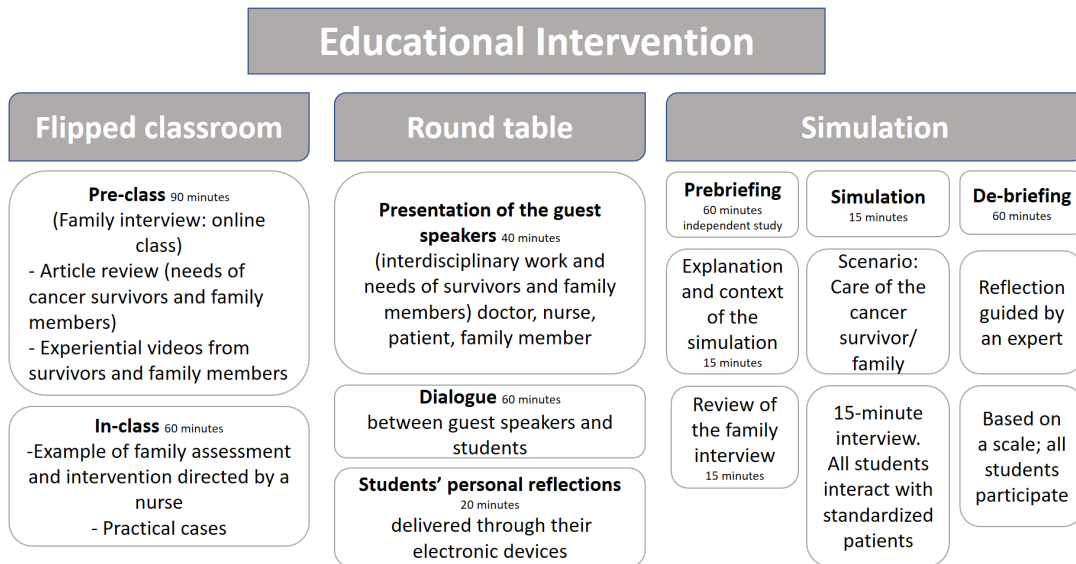
Table 1

Instruments of Measurement and Evaluation Time

Variables	Instruments	Informant	Evaluation time			
			IG		CG	
			T0	T1	T0	T1
Knowledge	Multiple-choice test	Students	X	X	X	X
Skill	VGFCR scale	Researcher	X	X	X	X
Attitude	FINC-NA scale	Students	X	X	X	X
Satisfaction	CSQ-8 scale	Students	-	X	-	X

Note 1. T0: before the intervention; T1: after the intervention
Note 2. VGFCR scale: Van Gelderen Family-Care rubric; FINC-NA scale: Families' Importance in Nursing Care-Nurses' Attitudes scale; CSQ-8 scale: Client Satisfaction Questionnaire

Table 2

Comparison of Baseline/Demographic Characteristics Between Intervention and Control Group

	Control group (N=29)	Intervention group (N=32)
Age		
(M ± SD)	20.69 ± 1.5	20.28 ± 0.5
Sex (%)		
Women	93.1	96.9
Men	6.9	3.13
Have you studied for another degree prior to nursing? (%)		
Yes	6.9	0
No	93.1	100
Do you currently work as a health professional? (%)		
Yes	6.9	0
No	93.1	100
Have you taken any course/subject in family nursing? (%)		
Yes	27.59	28.13
No	72.41	71.88

Table 3

Comparison of Dependent Variables Between the Two Groups

	CG		IG		Differences Between Groups	P-value
	M (±SD)	(95% IC)	M (±SD)	(95% IC)	M (95% IC)	
N	29		32			
KNOWLEDGE						
T0	12.97 (±1.50)	(12.42-13.51)	12.97 (±1.9)	(12.28-13.65)	-0.03 (-0.91-0.90)	.994
T1	14.00 (± 1.7)	(13.39-14.61)	15.16 (±1.4)	(14.69-15.63)	-1.15 (-1.94-(-0.37))	.004
SKILL						
T0	18.24 (±2.8)	(17.24-19.25)	18.56 (±4.14)	(17.14-19.99)	-0.32 (-2.11-1.47)	.721
T1	21.21 (±3.7)	(19.86-22.55)	34.72 (±2.8)	(33.76-35.68)	-13.51(-15.19-(-11.83))	.001
Family communication						
T0	10.79 (±1.99)	(10.03-11.55)	10.44 (±1.95)	(9.73-11.14)	0.35 (-0.65-1.37)	.483
T1	12.10 (±2)	(11.34-12.86)	17.47 (±1.94)	(17.00-17.93)	-5.36 (-6.24-(-4.48))	.001
Family as client						
T0	7.45 (±1.45)	(6.89-8.00)	8.12 (±2.46)	(7.24-9.01)	-0.67 (-1.72-0.37)	.494
T1	9.10 (±2.47)	(8.16-10.04)	17.25 (±1.70)	(16.63-17.86)	-8.14 (-9.22_(-7.06))	.001

	CG		IG		Differences Between Groups	P-value
	M (±SD)	(95% IC)	M (±SD)	(95% IC)	M (95% IC)	
N	29		32			
ATTITUDE						
T0	91.62 (±8.1)	(88.70-94.55)	92.63 (±6.86)	(90.27-94.98)	-1.0 (-4.84-2.83)	.602
T1	92.07 (±7.94)	(89.04-95.08)	97.69 (±4.13)	(96.19-99.17)	-5.61 (-8.81-(-2.42))	.006
Fam-RNC = Family as a resource in nursing care						
T0	41.76 (±4.76)	(39.94-43.57)	42.53 (±4.08)	(41.05-44.00)	-0.77 (-3.04-1.49)	.652
T1	42.97 (±3.85)	(41.50-44.42)	45.16 (±2.72)	(44.17-46.13)	-2.19 (-3.88-(-0.49))	.018
Fam-CP = Family as a conversational partner						
T0	28.72 (±2.88)	(27.62-29.81)	29.16 (±2.52)	(28.24-30.06)	-0.43 (-1.81-0.95)	.753
T1	29.62 (±2.69)	(28.59-30.64)	30.69 (±1.47)	(30.15-31.21)	-1.06 (-2.16-0.03)	.142
Fam-B = Family as a burden						
T0	13.89 (±2.37)	(12.99-14.79)	13.5 (±2.36)	(12.65-14.34)	0.39 (-0.81-1.60)	.373
T1	12.07 (±3.06)	(10.90-13.23)	14.25 (±1.97)	(13.54-14.95)	-2.18 (-3.48-(-0.87))	.002
Fam-OR = Family as own resource						
T0	7.24 (±1.05)	(6.83-7.64)	7.43 (±0.76)	(7.16-7.71)	-0.19 (-0.66-0.27)	.665
T1	7.41 (±1.02)	(7.02-7.80)	7.59 (±0.76)	(7.32-7.86)	-0.17 (-0.63-0.27)	.659

Note. VGFCR scale: Van Gelderen Family-Care rubric; FINC-NA scale: Families' Importance in Nursing Care-Nurses' Attitudes scale

Table 4

Satisfaction Questionnaire

N	CG* (n=34)	IG* (n=35)
How would you rate the quality of the programme received?	**(%)**	**(%)**
Poor	10.34	0
Just	27.59	0
Good	20.69	9.38
Very good	41.38	90.62
Did you get the kind of programme you expected?	**(%)**	**(%)**
Definitely not	6.90	0
Not really	51.72	9.38
Yes, generally	27.59	37.50
Yes, definitely	13.79	53.12
How well has the programme met your needs?	**(%)**	**(%)**
It has not met any of my needs	34.48	0
It has covered some of my needs	34.48	3.12
It has covered almost all my needs	3.45	53.12
It has covered most of my needs	27.59	43.75
If a friend or acquaintance were in the same situation as you, would you recommend the programme?	**(%)**	**(%)**
Definitely not	0	3.12
Not really	27.59	0
Yes, generally	34.48	9.38
Yes, definitely	37.93	87.50
What is your level of satisfaction with the training received?	**(%)**	**(%)**

Quite dissatisfied	10.34	0
Indifferent or somewhat dissatisfied	48.28	3.12
Mostly satisfied	20.69	12.50
Very satisfied	20.69	84.38
Has the programme helped you to better manage your difficulties?	**(%)**	**(%)**
Not really	0	0
It has not helped me	44.83	0
Yes, it has helped somewhat	34.48	6.25
Yes, it has helped a lot	20.69	93.75
Overall, what is your level of satisfaction with the programme received?	**(%)**	**(%)**
Indifferent or somewhat dissatisfied	41.38	0
Quite dissatisfied	6.90	0
Mostly satisfied	27.59	6.25
Very satisfied	24.14	93.75
If you were to look for training again, would you use the programme again?	**(%)**	**(%)**
Definitely not	0	3.12
Not really	31.03	3.12
Yes, generally	31.03	15.62
Yes, definitely	37.93	78.12

*CG= Control group; IG= Intervention group