



# Nursing Students' Knowledge and Attitude Toward Cancer Survivorship

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## Abstract

The number of cancer survivors is expected to rise to up to 20 million by 2026. It is of utmost importance that nurses who provide survivorship care enhance their knowledge and skills to meet the needs of cancer survivors. The purpose of this project is to propose a pilot evidence-based educational project to incorporate the concept and framework of the survivorship care plan for nursing students. We evaluated feedback from nursing students for their knowledge and attitude on cancer survivorship care. A pilot educational project was given to 38 undergraduate students and 17 graduate students. Pre- and post-test feedback were collected from these students. Content analysis was used to analyze the data. At least 60% of both undergraduate and graduate nursing students had experience in either adult or pediatric oncology units. Only 11% of undergraduate and 18% of graduate students reported awareness of survivorship care plans. However, all of the students believed the survivorship care plan will be helpful for cancer patients. We recommend that it is imperative to incorporate the concept of cancer survivorship in the early stage of nursing education.

**Keywords** Nursing education · Cancer education · Survivorship care

## Introduction

Over the past several decades, improvements in the early detection of cancer and effective therapies have led to increased numbers of cancer survivors. Currently, there are 13 million cancer survivors in the USA. This number is expected to rise

to 20 million by 2026 [1, 2]. During the transition from active treatment to post-treatment care, cancer survivors may be left lacking the knowledge, resources, or skills necessary to manage their disease and treatment's long-term effects. Hence, it is vital for patients who become cancer survivors to receive high-quality survivorship care.

Nurses have played a vital role in educating and assessing cancer patients and assisting in the continuity of care needed to cope with the late and long-term consequences of the medical conditions. The Institute of Medicine has highlighted the diverse roles that nurses could play in delivering high-quality cancer care, including assessing, educating, and coordinating care for patients through the care continuum. However, in the midst of a looming nursing staff and faculty shortage, there are fewer nurses who receive training and education in specialties, such as oncology [3–6]. In a survey of 2000 oncology nurses, nurse executives, and oncologists, the respondents reported that the shortage of experienced nurses led to decreased cancer care quality [5]. Studies have also shown that staff education contributed to significant improvements in all domains of survivorship care. However, barriers such as lack of time, funding, and inadequate knowledge were identified as hurdles to provide quality survivorship care [4, 7]. Furthermore, most nurses reported knowing the patient's physical well-being during active treatments, such as healthy lifestyles, chemotherapy, radiation, surgery, and symptom management.

## Implications for Practice

1. As key members of the healthcare workforce, nurses have a very critical role in increasing the survivorship education of patients and families, advocating for federal and state policymakers to ensure all cancer survivors receive the full range of services necessary to treat their disease, helping to expand evidence-based research to address issues related to the implementation of survivorship care plans, and finally securing the provision of competent, coordinated care for all cancer survivors.
2. Nurses, similar to survivors, also experience a need for access to timely knowledge and opportunities so as to influence the care of the ever-increasing survivorship population (i.e., communication skills).
3. A comprehensive cancer curriculum is warranted because well-educated nurses can improve the overall quality of cancer care.

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However, nurses were reported to be less knowledgeable on patient issues related to social and psychological well-being, such as employment, quality of life, genetic risks, and financial issues [8].

To ensure the nursing workforce is equipped with knowledge about cancer care, for patients not just during active treatments but also during post-treatment, infusing the notion of managing cancer as a chronic condition in nursing education is essential. In addition to continuing education, it is also recommended that educational institutions include portions of cancer survivorship in both undergraduate and graduate nursing programs. A comprehensive cancer curriculum is recommended to have the whole cancer trajectory and issues related to follow-up and survivorship care because well-educated nurses will further improve the quality of cancer nursing care [7, 8]. The concept of a survivorship care plan (SCP) has been recommended as a supportive framework to highlight the recommended contents of the cancer survivorship education curriculum [9–12]. Blending or introducing cancer care and survivorship concepts early in the nursing program curriculum could help foster student nurses' readiness and interests to practice in this specialty. While the concept of cancer survivorship is imperative, there is limited research to evaluate the knowledge and attitude of nursing students toward cancer survivorship. This paper describes the knowledge and attitude of cancer survivorship among nursing students from a pilot evidence-based educational project, of which the concept and framework of the survivorship care were incorporated.

## Method

A pilot evidence-based educational project was developed and administered to a group of undergraduate and graduate nursing students to evaluate cancer survivorship care's knowledge and attitudes.

## Proposed Educational Activities

The proposed educational activities for nursing students included (1) a brief lecture, (2) a discussion with a case study, (3) pre- and post-test, and (4) a reflective journal. This project's expectation was to produce nurses who recognize an ever-increasing population of cancer survivors who are in desperate need of champions to educate and advocate for their vast array of needs. The principles of this educational project included that cancer survivorship is a lifelong journey for cancer patients; it can change a cancer patient's life goals in various aspects of life, including interpersonal relationships, work-life balance, family building, life stage development, or control of symptoms and achieving the quality of life. Patients' life goals can be disrupted and need to be readjusted in the cancer survivorship journey. Nursing planning and goal

setting align with the needs of adjusting life goals in cancer survivorship [13–15]. It is essential to understand cancer survivorship's nature and concept and how to work effectively with cancer patients to improve the quality of life.

The lecture presentation introduced the current state of cancer survivorship in the USA, key areas of focus to address barriers to implementation, examples of and resources for survivorship care plans, and nurses' role in survivorship care. The brief lecture proceeded for approximately 30–45 minutes. In addition, a 15-minute discussion was conducted to explore students' perception of cancer, cancer patient, and oncology units. A follow-up case study of cancer patient was provided to student participants during a 30-minute session for immediate reinforcement and connection between the clinical scenario and didactic content.

The evaluation of the educational program included the use of a pre- and post-test survey. A pre-test consisting of 11 questions about students' knowledge of cancer care was given prior to the lecture presentation. As the participants were likely to have some knowledge about the distinctive roles of nurses in cancer care and cancer care in general, the pre-test served as a baseline knowledge of nursing students about cancer care, specifically survivorship care. Following the educational segment, a post-test consisting of 7 questions that were distinctive from the pre-test was given. Pre- and post-test surveys were administered to participants as anonymous surveys. Supplemental to the pre- and post-test was the reflective journal. The use of reflective journal in nursing helps create an understanding of situations in current and past events. The process of reflective writing enhances students' clinical reasoning skills and self-awareness in clinical situations [16]. The purpose of using the reflective journal in this project was to encourage students to document personal reflections on current challenges and issues encountered with cancer survivorship care. This activity was voluntary. Students were encouraged to develop a reflective journal to document the reflection and observation of cancer survivorship during their clinical practicum if they had the rotations in cancer survivorship care.

## Participants

The pilot educational plan was administered to nursing students in one undergraduate course and one graduate course during the academic year of 2017–2018 at a school of nursing in the Northern California region. The course instructors were consulted, and their approvals were obtained to coordinate the class time to provide the proposed educational activities to these students. All student participants were given information about the goal of this project. In addition, information on voluntary participation and confidentiality of pre- and post-tests was given. The institutional review board approved the data analysis of pre- and post-test feedback obtained from this project.

## Data Analysis

The pre- and post-test data were summarized through a content analysis process where themes and categories were generated inductively. Content analysis is a method to analyze the presence, meanings, and common relationships of concepts and themes [17]. Content analysis was considered to be manifest analysis, where the data represented what the participants say. This way, misinterpretations were hoped to be reduced. Lastly, to increase the validity of data analysis, two investigators analyzed the results from the pre- and post-tests and obtained the consensus of the themes.

## Findings

Between August 2017 and March 2018, a total of 55 nursing students were entered into this educational project. The undergraduate nursing students ( $n = 38$ ) received this educational activity in one of their first nursing pre-licensure courses. Graduate students ( $n = 17$ ) received this educational activity in one of their final program courses. As alluded to earlier, these students came from a combination of ethnic/racial, age, and educational background. More than or at least 50% of the nursing students have had experience with the adult patient population. At least about 60% of both undergraduate and graduate nursing students also had experience in working at a pediatric and/or adult oncology unit.

Of the total of 55 participants, 55 (100%) completed the pre-test, while 53 (96%) completed the post-test. Given that this educational project was carried out among the first-semester nursing major undergraduate students, some students had yet to start their formal training on how to use the nursing process and nursing care plans, which are clinical reasoning tools commonly used in nursing education. Hence, it was expected that less than half (45%) of the participants would identify themselves as not yet comfortable with nursing discipline-specific reasoning tools. However, 55% of undergraduate nursing students expressed that they were “somewhat comfortable” in developing nursing care plans compared with 59% of graduate students suggesting they were “comfortable.” In addition, 63% of undergraduate students have not used any electronic healthcare systems. Graduate students, as expected based on the level of education, had all (100%) used at least one of the electronic healthcare systems (Table 1).

Only 11% of undergraduates and 18% of graduate students reported awareness of survivorship care plans. In addition, only 3% of undergraduate and 12% of graduate nursing students could accurately answer what is the range of cancer survival rates. Based on the responses to these two questions, the gap in students’ knowledge about cancer survivorship was evident, whereas most of the student participants showed a better understanding in the acute stage of cancer care. At least

68% of the participants were knowledgeable about the types of treatment for patients with cancer, which includes medications, chemotherapy, radiation, surgery, and palliative care. All student participants understood that patients with cancer can experience multiple side effects from their treatments. Lastly, 100% of the participants reported that nurses had a major influence on their patient’s quality of life and that educational materials were necessary for educating cancer patients and families regarding their cancer care (Table 1).

The open-ended questions and interviews from the post-test assessments revealed several common themes (Table 2). Following the education section of this project, all (100%) of the undergraduate and graduate nursing students believed survivorship care plans to be helpful for patients and at least 97% concurred in the adoption of a multidisciplinary team in the development of these survivorship care plans. Moreover, 95% of undergraduate students and 75% of graduate students expected institutional support for the development and implementation of survivorship care plans. The common themes included recognizing the complexity and multidimensionality of cancer, ensuring patient’s safety and quality of life, continuous education of cancer survivorship among institution leaders and medical staffs, transferability versus specialization of cancer survivorship care plan, and barriers and facilitators for implementation. In the theme of “recognizing the complexity and multidimensionality of cancer,” student participants generally recognized that cancer is a complex and prevalent condition, where multidisciplinary patient-centered care is important to the quality of life. In the theme of “ensuring patient’s safety and quality of life,” students reported that it is the duty of nurses to ensure patient’s safety and quality of life, and nurses understand the multidimensional aspects of caring for cancer patients. Nurses can play key roles in coordinating empathic care and advocacy for cancer patients. In the theme of “continuous education of cancer survivorship among institution leaders and medical staffs,” participants described educating providers to empower cancer survivors to participate in their care and manage fears or reoccurring issues. The use of educational tools in staff education can help in the adoption of SCP, such as electronic versions and patient education to share the SCP with other providers. In the theme of “transferability versus specialization of cancer survivorship care plan,” there are conflicting points of views shared by the participants. Some participants considered that SCP is specific only to oncology units, not applicable to other settings, such as the emergency department. Some students considered that education should only be included in oncology or nurses who specialize as they never come into contact with cancer patients, whereas the need to include survivorship care in nursing education was supported by some participants as well. In the theme of “barriers and facilitators for implementation,” the possible barriers and facilitators to implementing SCP identified by student participants included willingness to participate, lack of staff

**Table 1** Comparison of answers to pre-test questions between undergraduate and graduate nursing students

Question	BSN (n = 38)	MSN (n = 17)
What kind of patients do you work with?	Pediatric 8 Adult 19 (50%) No answer 11	Pediatric 4 Adult 13 (76%)
Have you ever worked in a Peds/Adult Oncology unit?	Yes 2 (5%) No 36 (95%)	Yes 7 (41%) No 10 (59%)
How long have you been writing nursing care plans?	0–6 months 37 (97%) 7–12 months 0 (0%) 1+ year 0 (0%) No answer 1 (3%)	0–6 months 0 (0%) 7–12 months 2 (12%) 1+ year 15 (94%)
How comfortable are you in writing care plans?	Somewhat 21 (55%) Comfortable 0 (0%) Proficient 0 (0%) No answer 17 (45%)	Somewhat 6 (35%) Comfortable 10 (59%) Proficient 1 (6%)
What kinds of electronic health systems have you used (top three types)?	Epic 7 Soarian Meditech 3 None 24 (63%)	Epic 14 Soarian 4 Meditech 0 None 0 (0%)
Do you know what Advanced Care Planning is?	Yes 4 (11%) No 34 (89%)	Yes 3 (18%) No 14 (82%)
What do you think is the current cancer survivorship rate?	0–30% 14 (37%) 31–60% 21 (55%) 61–99% 1 (3%) No answer 2 (5%)	0–30% 2 (12%) 31–60% 12 (71%) 61–99% 2 (12%) No answer 1 (5%)
What do you think are the current treatment options for cancer?	Medications 38 (100%) Chemotherapy 38 (100%) Surgery 32 (84%) Radiation 24 (63%) Palliative 26 (68%)	Medications 16 (94%) Chemotherapy 17 (100%) Surgery 16 (94%) Radiation 17 (100%) Palliative 17 (100%)
Do you think cancer patients get side effects from their treatments?	Yes 38 (100%) No 0 (0%)	Yes 17 (100%) No 0 (0%)
Do you think nurses have an impact on the quality of life of their patients?	Yes 38 (100%) No 0 (0%)	Yes 17 (100%) No 0 (0%)
How helpful do you think educational materials (ie. brochures and pamphlets) are in educating patients and families?	Helpful 24 (63%) Somewhat helpful 14 (37%) Not helpful 0 (0%)	Helpful 14 (82%) Somewhat helpful 3 (18%) Not helpful 0 (0%)

support, lack of information, and institutional support and awareness. The most common barriers anticipated by the undergraduate students in the utilization of survivorship care plans were time and funding, while graduate students identified time and physician support as the greatest barriers to use. Moreover, 95% of undergraduate students and 75% of graduate students expected institutional support for the development and implementation of survivorship care plans. Furthermore, participants were asked to recommend strategies related to the role of nurses to address the barriers of time, funding, institutional support, and physician support. The responses included continuing education for providers, institution leaders (i.e., directors, managers), nursing staff, and patients; increase in research to expand evidence-based practice; achieving standardization of survivorship care plans (i.e., use the same survivorship templates); and the acquisition of

community support as top priorities that determine the successful implementation of survivorship care plans (Table 2).

The reflective journal helped students connect their clinical observations with abstract complex concepts related to cancer survivorship. As shown in the example voluntary reflective journal (Table 3), a graduate student described the change of attitude and understanding toward cancer survivorship after the clinical interaction with cancer patients and clinicians.

## Discussion

According to the results of this study, nursing students agreed that nurses play a critical role in patient education and care coordination for cancer patients. However, only a small

**Table 2** Content analysis of post-test surveys

Theme	Subtheme	Exemplar narratives	
Recognizing the complexity and multidimensionality of cancer	Cancer, as a disease itself, is complex.	<p>“Cancer is very complex so we need many specialists!”</p> <p>“Yes because many patients have co-morbidities.”</p> <p>“Cancer is complicated.”</p>	
	A multidisciplinary team is important in the provision of patient-centered care that has repercussions in the overall quality of life of patients.	<p>“... it would help the patient overall.”</p> <p>“It can provide more patient-centered care.”</p> <p>“... it would help the patient overall.”</p> <p>... more comprehensive practice, patient-centered, improve QOL.”</p>	
	Cancer care is relevant with cancer as top 5 cause of death in the USA.	<p>“Cancer is becoming more and more prevalent.”</p> <p>“Yes because cancer is an increasing issue in healthcare.”</p> <p>“Cancer plays a huge role in our society today.”</p> <p>“Yes, cancer is so widespread that we should be well educated on it.”</p> <p>“It is important as rates of cancer increase, technology improves we are going to have an increase in the number of survivors who need specialized care.”</p>	
Ensuring patient’s safety and quality of life	Institutional support of survivorship care plan utilization is important because institutions are obligated to keep patients safe and help patients achieve a high quality of life.	<p>“It is good for the patient.”</p> <p>“To improve patient satisfaction, patient experience, and give patients the best care.”</p> <p>“They (institution) can provide a good amount of knowledge and skills that is beneficial for the patient especially since nursing practice is evidenced-based.”</p> <p>“Their goal is to improve patient’s QOL and take preventative measures so they stay healthy even after their visit.”</p> <p>“It is very beneficial to the cancer survivor!”</p> <p>“... patient still needs care after their treatment. We can’t just leave them.”</p> <p>“It will help the patients if they have more support.”</p> <p>“Yes, because the goal in tertiary healthcare is to increase the quality of life.”</p> <p>“Yes, because part of the hospital’s mission is patient safety and zero harm. Therefore, SCP’s would contribute greatly to better patient care safety and quality of life.”</p>	
		The nurses’ primary responsibility is to patients according to the American Nurses Association (ANA) and the International Council of Nurses (ICN).	<p>“It helps our duty to help our patients ...”</p> <p>“... so we are prepared for when we join the workforce.”</p> <p>“Yes, because it gives new nurses a way to help patients get support and continuous care. And it would help future caregivers give appropriate care.”</p>
		In order for nurses to help and care for their survivor patients, they need all the tools necessary for the delivery of this high-quality care.	<p>“I think nurses are understanding of the potential for multidimensional aspects of caring for cancer patients.”</p> <p>“It should be implemented especially for ongoing treatment, follow-up appointments, what to do, what to expect.”</p> <p>“The oncology nurses I interacted with seem very supportive of and loyal to their patients, and would want to help their long-term quality of life.”</p> <p>“Cancer is one of the top 5 causes of death in the U.S. We should focus on how to keep rates low in survivors by reducing relapse.”</p> <p>“Nurses’ role is to make sure patients are educated and aware of their health conditions.”</p> <p>“... because nurses want to increase health promotion and by doing so, they would support the care plan.”</p> <p>“... to educate patients and prevent complication due to cancer treatment and help prevent recurrence of cancer.”</p> <p>“Tools are useful.”</p> <p>“As a nurse not in oncology, this would help me provide better care for my patients with history of cancer.”</p> <p>“Yes, the nurses at my site are very open and willing to take on whatever tools can be used to improve their client outcomes.”</p>
		Advocate for patient needs.	<p>“Advocacy, disease management, policy change”</p> <p>“... it is essential in helping patients transition to be their own patient advocate in the survivor stage.”</p> <p>“I think giving patients time to talk, do art, connect with other survivors. Advocating for advanced care planning!”</p>



**Table 2** (continued)

Theme	Subtheme	Exemplar narratives
Continuous education of cancer survivorship among institution leaders and medical staffs	Counsel and give support to patients.	<p>“Nurses need to advocate to get their patient the right info, even if the nurse doesn’t know what info themselves. The nurse should help the patient find someone who can educate the patient.”</p> <p>“Advocating for patients”</p> <p>“Counseling”</p> <p>“Provide surveillance and give support refer them to counseling if needed.”</p>
	Provide empathic, competent, and coordinated care to patients.	<p>“Be patient and understandable to patients and families.”</p> <p>“To provide quality and competent patient care ...”</p> <p>“To involve the patient in their own care.”</p> <p>“Opening lines of communication and normalization of a cancer survivor experience.”</p> <p>“Being empathetic when providing care.”</p>
	Patients or survivors need knowledge, skills, and resources to help them manage their needs.	<p>“... it will better the outcome of patient experience and survivorship.”</p> <p>“It supports patient and their well-being.”</p> <p>“Yes, patients need better tools, education, and skills.”</p> <p>“...in order to provide better education for patients.”</p> <p>“... the more education, the better.”</p> <p>“Everyone should be informed and aware.”</p>
	The care of cancer survivors involves many clinicians with various specialties. Staying informed and up-to-date with the patient’s care is crucial in the delivery of appropriate care.	
	Education of leaders in healthcare as well as of staff can help in disseminating information, in empowerment, and thus in the widespread adoption of SCPs.	<p>“Educate more people about it. Spread the word of what it does and what its benefits are.”</p> <p>“More education and information.”</p> <p>“Educating the public that it will save money and workload in ED.”</p> <p>“Info sessions in institutions where survivors share their experiences after discharge.”</p> <p>“Get information out to physicians and institutions ...”</p> <p>“Education.”</p> <p>“Education of providers to empower survivors to participate in their care to stay cancer free or manage fears or reoccurring issues.”</p> <p>“Work to educate management and directors first.”</p> <p>“More education and advocacy.”</p> <p>“Electronic version and/or patient education to share the care plan with other providers.”</p> <p>“Better education around the importance and maybe limit the number of patients who would need one per nurse (if possible).”</p> <p>“Make care plans part of discharge planning. Social work/case management should help with this!”</p> <p>“More staff education.”</p> <p>“Education on oncology units.”</p> <p>“Education and lobbying”</p> <p>“Education and awareness.”</p> <p>“Presenting information so people buy into the program.”</p> <p>“Education”</p> <p>“Giving skills, knowledge supporting them in recovery”</p> <p>“To learn more about survivorship care first.”</p> <p>“Provide resources”</p> <p>“Just to give them as much information would be best.”</p> <p>“... making sure resources are available and provided to patients and families.”</p> <p>“To educate patients ... in a language that they are able to connect with.”</p> <p>“... making sure they understand the information.”</p> <p>“Education, compassion, empowerment of patients to participate in their own care.”</p> <p>“Being an advocate and educator.”</p> <p>“Discharge education.”</p> <p>“Educating families and being emotionally intelligent.”</p> <p>“Awareness and a willingness to learn.”</p>
	To be educated himself or herself in order to provide knowledge, skills, and resources to patients.	

**Table 2** (continued)

Theme	Subtheme	Exemplar narratives
Transferability versus specialization of cancer survivorship care plan	Survivorship care plans are not useful in other units.	<p>“Education, support, buy-in from physician and CNS/CNL.”</p> <p>“It is one of our responsibilities to provide the education.”</p> <p>“Handouts, group support resources, community events, having an open mind so they have someone to reach out to.”</p> <p>“Might be too much for the already strained system.”</p> <p>“Yes but oncology unit because not worthwhile elsewhere.”</p> <p>“I don’t think the ED cares.”</p> <p>“Yes, depending on the unit, nurses will be excited and willing to take the extra step.”</p> <p>“Not so much in the ER. It’s more that we would want to see the patient’s care plan when they come in so we know diagnoses/who to contact.”</p>
	Survivorship care can be applied to many other health settings, aside from hematology/oncology units.	<p>“I do believe that survivorship care should be included in nursing education. We do not get enough of this in nursing school and it is applicable in all areas of healthcare.”</p> <p>“... just like other care plans, cancer survivors should be included as well.”</p>
	Survivorship education only applies to those who work or plan to work in hematology or oncology units.	<p>“Depends on the setting. Definitely on heme/onc floors.”</p> <p>“Education should only be included in oncology or nurses who specialize; otherwise many of us never come into contact with that population.”</p>
Barriers and facilitators for implementation	Lack of support from nurses is a barrier to implementation of survivorship care plans.	<p>“lack of nurse support”</p> <p>“nurse adherence”</p>
	Lack in accountability for these care plans are also barriers to implementation.	<p>“Willingness of patients to participate in their own care”</p> <p>“Lack of information”</p> <p>“Access to care plans once completed across different facilities and settings.”</p> <p>“Whose responsibility? Can these resources be a pre-loaded order physicians can write for nurses to follow?”</p>
	Standardization of SCPs across institutions can lead to effective implementation.	<p>“Evidence and data”</p> <p>“Policy change”</p> <p>“Apply for grants ...”</p> <p>“... research ...”</p> <p>“Standardize care plans for survivors in all institutions.”</p> <p>“... have the same electronic forms in all hospitals ...”</p> <p>“Present literature/research and a plan for implementation.”</p>
	Gain support from community in order to help raise funding.	<p>“Find cost-effective ways to support ...”</p> <p>“Community-based fundraisers”</p> <p>“More awareness and support from the medical community such as insurance companies.”</p> <p>“Find the money and find the time.”</p>

portion of both undergraduate and graduate students were aware of the concept of cancer survivorship, long-term trajectory of the illness, and accurate cancer survival rate, whereas most students had a better awareness of the multidisciplinary effort and system infrastructure which are required to implement cancer survivorship care planning. However, the results showed a mixture of misperception about their future roles in cancer survivorship care planning when they start in their own clinical practices. The gap in students’ understanding could be due to the fact that most courses offered in nursing curricula focus on basic science, treatments, and interventions occurring in the acute care phase or episodic cares. Although the post-treatment supportive care and palliative care related to cancer has been increasingly incorporated in nursing curricula, the concepts of care coordination and transition between

treatment phase and survivorship can be still foreign to nursing students, especially to undergraduate students.

Notably, a couple of the graduate students did not perceive a role for them in cancer care for the reason that he or she was not an oncology nurse. Nursing students, regardless of the level of education, still hold inaccurate impressions regarding cancer care. This inaccurate belief that cancer patients and survivors only receive care from oncology nurses is another reason to include the concepts related to cancer survivorship in nursing curriculum. Cancer patients may also receive generalized clinical care; for instance, a leukemia survivor may be admitted to the emergency department for shortness of breath related to a recent bone marrow transplant. The notion of departmentalizing cancer care based on institutional structure and medical specialty was rooted in students’ perceptions.

**Table 3** Example of a reflective journal

Journal entry	Clinical area	Timeline
Our clinicals this semester are located in various low-income institutions. Most of the patients we encountered were low-income and elderly. We did health screenings (i.e. blood pressure, blood glucose, cholesterol). I met patients with Diabetes, Hypertension, Obesity, and Cancer (Breast and Prostate). Since we are assigned to different locations, I wonder if my classmates have met any cancer patients in the community.	Health promotion	First semester (undergraduate)
I was assigned in the Pediatric Heme/Onc unit at XX for 2 clinical days. I met patients admitted for chemotherapy infusion, radiation, biopsy, pain, etc from infants to teens. It is hard to watch children battle against cancer. The whole family dynamics get affected. The mother is the one who usually stays by the sick child. Social workers help to ensure that siblings can still go to school. XX has a school in the hospital for the patients and their siblings. Nurses have to advocate for their patients. Some families are so focused on their child that their own needs get neglected.	Pediatrics/adult nursing	Third semester (undergraduate)
I probably met at least 10 cancer patients during my entire rotation in this unit. Patients had various types of cancer and were admitted for different diagnoses such as chemo infusion, pain, etc- Just like in peds cancer unit. How come there is no specialized oncology unit at xxx? Maybe financial factors? I think that cancer patients do not necessarily need a specialized unit. They may need specialized care for their cancer but they also need generalized care just like the rest of the patients in this acute care unit. I met one or two cancer patients in palliative care. Caregiver support is really important, I think. Nurses can really help provide education and support to caregivers.	Adult med-surg/oncology/surgery/-palliative care unit	Fourth semester (undergraduate)
I had the chance to work with a Geriatric CNS and we investigated cases related to mobility and hygiene. I had some patients with a cancer diagnosis. I learned that some of these patients are survivors and that caregiver/family support has a considerable influence on the quality of life of these survivors.	Quality department	Graduate rotation I
Psychological health is a big component of survivorship. Anxiety and depression are commonly seen. A simple intervention such as breathing exercises can cause a huge improvement in your patient’s day.	Oncology/blood and marrow transplant unit	Graduate rotation II
Ever since I started this rotation about 2 months ago, I feel that I have learned so much that I have dispelled many myths that have come up during my survivorship lecture. First, it is not “depressing” to work in a hematology/oncology unit. A lot of nursing students think that it’s “hard” to work with “dying” patients. I guess it is all relative. For me, personally, I do not think that cancer patients are depressing. It is quite the opposite, I believe. Cancer patients and survivors are full of life. They are probably some of the most positive people I have ever met in my life. Maybe because they have experienced life and death firsthand, and I have experienced death in my family multiple times. Another fact I learned that I strongly want to share to my classmates is that cancer patients get admitted to other units such as the ED or Med-Surg. From my lecture, some graduate students believed that they will never encounter an oncology patient because they don’t work in oncology. This lack in knowledge increases my determination to promote cancer care education to ALL nurses.		
In terms of the use of survivorship care plans, I have had the chance to meet with a nurse practitioner who is in charge of survivorship education to cancer survivors at my clinical setting. She explained to me that each care plan (SCP) is unique depending on the type of cancer and the survivor’s personal health history. She also communicated to me that physician and nurse buy-in are both very important in making survivorship care plan a standard practice. She states that if and when clinicians recommend SCP to their patients, patients lean towards its use. Lastly, she gave me a list of educational classes and support group sessions for survivors at the facility. I was surprised at how much resources are available for survivors. It made me think about my uncle who is a cancer survivor living in a third world country. He told me there are no resources as extensive as what we have here in the United States.		
Additionally, communication with some of the staff nurses has revealed that nurses prefer an electronic system that automatically completes a SCP by copying data from patient’s electronic medical record. I also found that some of the oncology nurses are unaware of their institution’s practice/s regarding survivorship care. For example, some nurses did not know that they can “refer” their patient to the survivorship care nurse practitioner.		

Lastly, participants were invited to share their views in regard to the incorporation of survivorship care in nursing program curricula. All undergraduate nursing students and 67% of

graduate nursing students supported the inclusion of survivorship care in their nursing education. This discrepancy in the degree of enthusiasm and support for survivorship care plans



between undergraduate and graduate students is, perhaps, partly related to the fact that graduate students were, at the point of their career development, certain about their particular clinical emphasis. In contrast, undergraduates were yet to familiarize themselves with the different specialties surrounding nursing care and thus are more receptive to change.

The content of cancer nursing care has been recommended as one of the key content areas to be taught in nursing curricula [18–21]. A quality education and training in cancer care can provide foundations to healthcare professionals acquiring the knowledge, skill, and attitude to manage actual or potential human responses in cancer care continuum [20]. Most of the recommended cancer nursing curricula were proposed for post-entry nursing specialization and certification in oncology, which include multiple modules from basic science and treatment of cancer to evidence-based application in cancer care to cancer as a chronic illness [18–20]. While a comprehensive curriculum can help providers to develop mastery of oncology care, it can be a challenge to integrate the whole program in the pre-licensure or undergraduate programs when contents of other specialties (e.g., cardiovascular, pediatrics) are also needed in the undergraduate nursing curriculum. It has been found that a short (3.5 days) collaborative program co-produced by instructors, practitioners, patients, and caregivers, on the long-term impact of cancer, can enhance good overall knowledge of the impact and consequences of a cancer diagnosis, more positive attitudes toward cancer treatment and cancer care, and greater confidence in their ability to support cancer patients at all stages of the cancer journey from pre-diagnosis to survivorship among undergraduate nursing students [21]. Our study results also showed that participants' appreciation and understanding of cancer survivorship can be enhanced after a short program of which a combination of different learning activities (lecture, discussion, and reflection) was implemented. As shown in this pilot project, short and interactive learning activities can enhance learner's knowledge, skill, and attitudes while complex concepts are introduced [22]. Additionally, reflective writing is a helpful tool in medical and nursing education [23]. As used in this study, incorporating reflective journaling in concurrent clinical rotations can be an effective tool to engage undergraduate and graduate students to identify the gaps between the conceptual understanding and clinical observation of cancer survivorship, explore career interest in oncology care, and encourage developing self-awareness in personal's strengths and limitations.

## Conclusion

The introduction of concept of cancer survivorship care will help educated and competent nurses who are valuable in ensuring a positive quality of life for survivors. In addition to understanding the pathophysiology of cancer and whole

cancer trajectory, handling issues related to follow-up and survivorship care, such as communication training, is necessary to be initiated early in the nursing curriculum for both undergraduate and graduate students. Quality communication is an integral part of cancer care. Nurses encounter complications in conversations that include “bad news, spiritual or religious concerns, and palliative care issues with patients and families from different cultures” [24]. Yet nurses report communication barriers to patient-centered care. It was reported that oncology nurses have limited opportunities to receive communication training. Lack of consistency in communication from healthcare staff and lack of adequate knowledge are found to be the challenges for oncology nurses to understand and sort out information to patients and families. Additionally, the relationship between nurse and physician determined the communication flow about the patient's plan of care can pose additional challenge [24]. As summarized from our study findings, these key concepts and training could be introduced early in the nursing education in both undergraduate and graduate programs to support nursing new graduates and enhance their readiness in providing cancer care. Future research can explore the effectiveness of different learning modalities in deliver cancer care content for both undergraduate and graduate students in nursing. As the number of cancer survivors is increasing and there is a looming shortage of oncology workforce, it is vital to introduce the topic of cancer care and engage students who are interested in cancer care early on in the pipeline of workforce development [25].

## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflicts of interest.

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