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Educating Oncology Nurses on the Benefits of Patient Exercise

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
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Abstract

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MSN, Walden University, 2009

BSN, Salisbury State University, 1995

Project Submitted in Fulfillment

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Doctor of Nursing Practice

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Abstract

Exercise benefits patients with cancer during and after treatments. A formalized educational program is lacking at the project's site for oncology nurses on the benefits of exercise for their patients during and after treatment. The purpose of the project was to address the identified gap in practice at the project's site by providing education to oncology nurses on the benefits of exercise for their patients during and after treatment. The ARCS model of motivational design was used as a theoretical foundation to develop and guide the educational program presented to the oncology nurses. The question addressed in the project was: Will oncology nurses show an improvement in their knowledge on the benefits of exercise for patients during and after cancer treatments when comparatively measured pre-education and immediately post-education? The nature of this project was quality improvement with a pre-posttest approach. A total of 14 female registered nurses routinely employed in the oncology department (*M* age = 36.7 years, *SD* = 12.0) took part in the project. Their knowledge level was tested before and after the intervention using an assessment tool developed for the project. Data analysis from the paired sample *t* test using the IBM SPSS version 24 showed a significant improvement in the nurses' knowledge at posttest (*M* = 6.86, *SD* = 1.027) compared to pretest (*M* = 8.36, *SD* = 1.447); $t(13) = 4.0070$, $p = .001$. The findings suggest the intervention was effective in improving nursing knowledge regarding the benefits of exercise in patients undergoing cancer treatment. The implication for positive social change is that incorporation of staff education regarding exercise in oncology patients can improve nursing knowledge that can then promote positive patient outcomes.

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Dedication

This project is dedicated first and foremost to God who provides the opportunities and strength to get me through. HE blessed me by sending my husband my way who has been my biggest support and who encouraged me not to quit. I honestly can say I have the most perfect husband...a true gift from God.

Acknowledgements

I would like to express my sincere gratitude to Dr. Dorothy Hawthorne-Burdine, my committee chair, for her ongoing encouragement, patience, guidance, and immense knowledge that have helped me grow and to critically think. I would also like to thank Dr. Tracy Wright for her time and willingness to provide supportive feedback to help me move forward in this program so that I am successful. In addition, I would like to thank Dr. Sharon Krumm, my preceptor for her invaluable input, time, and heartfelt support.

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Section 1: Nature of the Project

Introduction

Cancer treatments involving radiation can be exhausting and taxing on the body. Up to 90% of patients undergoing radiation therapy experience fatigue, diminished interest in being active, muscle weakening, and decreased activity level (Hofman, Ryan, Figueroa-Moseley, Jean-Pierre, & Morrow, 2007). Patients undergoing radiation treatments may become deconditioned due to their fatigue, leading to worsening health, more physical health problems, and an increased risk of more diseases (Booth, Roberts, & Laye, 2012). Cancer treatments including chemotherapy, surgery, radiation, and hormonal therapy can last months to years and may lead to a reduction in quality of life (QOL; Kassab, 2013). To combat this, evidence has shown that physical activity can significantly help with strength and activity impairments, regardless of the cancer type (Kruk & Czerniak, 2013). According to McNeely et al. (2006), exercise can improve cancer patient's functional level, quality of life (QOL), and involvement in life activities.

Physical activity is linked to positive effects on physical functioning, psychological outcomes, and body composition (Fong et al., 2012). Physical activity promotes good health and reduces the risk for disease. According to the Centers for Disease Control and Prevention (CDC; 2015), regular physical exercise helps reduce the risk of cardiovascular disease and Type II diabetes, can reduce cancer risk, improves mental health, and helps people live longer. Physical inactivity can lead to health problems and increase individual risk for certain cancers with a stronger survival link being noted in patients who exercised (Haydon, MacInnis, English, & Giles, 2006).

Up until the last decade, the clinical recommendation for oncology patients was to avoid activity and get as much rest as possible, especially if feeling fatigued (Curt et al., 2005). Emerging research has challenged this recommendation and now the evidence suggests patients should be as active as they can tolerate (Fong et al., 2012). Cramp and Byron-Daniel (2012) performed a meta-analysis of studies whose focus was exercise for cancer-related fatigue. No specific cancer type was examined; the authors examined cancer as a whole. Using a random-effects model, the results showed that exercise can help reduce fatigue both during and after treatment (Cramp & Byron-Daniel, 2012). Physical activity at moderate levels has positive effects on QOL, according to a study by Mishra et al. (2015).

There was no formalized education about the benefits of exercise provided at the project site by nurses to patients receiving radiation treatment for cancer. The project site was an outpatient oncology setting within an urban hospital in the eastern United States. Insufficient education regarding the benefits of physical activity during cancer treatment is a nursing practice gap. The nature of this doctoral project was educational for oncology nurses on the benefits of patients exercising during and after cancer treatment. Education about the benefits of exercise will lead to an increase in physical activity, and increased activity is directly linked to better patient outcomes like QOL (Courneya, Mackey, & Jones, 2000). Implementing this project has positive social change implications because of its beneficial impact on the patient population's health.

Problem Statement

There was no formalized education at the project site provided to oncology nurses about the benefits of exercise for patients undergoing radiation cancer treatment. The focus of this doctoral project was to address an educational gap in nursing practice by implementing a formal educational program to nurses in a hospital-based outpatient oncology setting. The significance of the project was successful implementation of an educational program for the nursing staff would lead to patient education via those same nurses. Chelf et al. (2001) conducted research and found that patients with cancer benefit from and desire education about topics such as physical activity. The project holds significance for the field of nursing practice because it can be applied to other areas of nursing practice where education to patients about the benefits of exercise is lacking.

Purpose

The practice focus question was: Will oncology nurses show an improvement in their knowledge on the benefits of exercise for patients during and after cancer treatments when comparatively measured pre-education and immediately post-education? The practice focus question was based on the Oncology Nursing Society's (ONS) "Get Up, Get Moving" campaign (ONS; 2016). In this doctoral project, I addressed the identified gap in practice by providing education to nurses that exercise is beneficial during and after treatment and prevents metastasis, helps manage fatigue, and improves QOL.

Nature of the Doctoral Project

The nature of this project was quality improvement with a pre-posttest approach. My aim was to improve the nurses' knowledge regarding the benefits of exercise as well

as physical activity recommendations for patients. Development of and planning for quality improvement is a vital component to both hospital operations and patient care (Hughes, 2008). This project included a systematic plan with the short-term goal of improving nursing knowledge and the long-term goal of improving health care services for outpatient radiation oncology patients. Patients undergoing radiation therapy should consistently receive education regarding fitness and physical activity in order to improve their QOL (Mina, Alibhai, Matthew, Guglietti, Steele, Trachtenberg, & Ritvo, 2012). I utilized guidelines from the ONS's (2016) recommendations for practice, the "Get Up, Get Moving" campaign, to develop an education program for radiation oncology nurses. The Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) model was used to support the project. The JHNEMP tools include a project management guide that helps with practice question formulation, evidence-gathering, and translation of findings; a question development tool that helps define the research question from the patient, intervention, comparison, and outcomes (PICO) model; research evidence level appraisal tools and guides; and a guide to help synthesize discovered evidence (Johns Hopkins Medicine, 2017). My focus with this quality improvement project was education of oncology nursing staff.

Significance

This project contributed to nursing practice by applying evidence-based practice to the problem of functional decline in cancer patients. Up to 90% of patients become fatigued and deconditioned during the course of their treatments (Lawrence et al., 2004). Patients can combat fatigue and functional decline by engaging in regular exercise, but

they need to know about its benefits (Musanti, 2016; Winningham et al., 1986). Patients with more awareness, knowledge, and appreciation for the benefits of physical activity are likely to put that knowledge into practice (Mina et al., 2012). Education by oncology nurses to patients about the importance of exercise was the critical missing link at the project site. This project also has potential applications in clinical settings other than radiation oncology.

The project was important to stakeholders other than nurses and patients. Subject matter experts, such as physical therapists and oncology physicians, were stakeholders potentially affected by the project. Physical therapists had the potential to appreciate increases in consultation and treatment requests from the outpatient oncology setting. Providers might have been asked to comment more about the suitability and acceptable level of exercise by oncology patients under their care. I incorporated input from physical therapists into the design and the development of the education program.

Summary

In summary, cancer commonly increases patients' fatigue. Researchers have shown that exercise helps to reduce fatigue, prevent deconditioning, and improve QOL. There was no formalized education at the project site provided to oncology nurses about the benefits of exercise for patients undergoing radiation cancer treatment. With this doctoral project, I addressed the identified nursing practice gap by educating nursing staff about the benefits and recommendations of exercise for patients undergoing cancer treatment. The nature of the project was educational, and its aim was quality improvement. Oncology nurses participating in the project were provided education that

could be passed along to patients, so they can promote their own QOL. In the next section the context of the problem will be discussed along with supporting background and theoretical approaches to address the practice issue.

Section 2: Background and Context

Introduction

Physical activity is beneficial for patients undergoing cancer treatment (National Cancer Institute, 2017a). There was no formal education regarding the topic of exercise and its benefits to oncology patients undergoing treatment provided to nurses at the project site, which was an outpatient oncology setting located in a large urban hospital in the eastern United States. The project question was: Will oncology nurses show an improvement in their knowledge on the benefits of exercise for patients during and after cancer treatments when comparatively measured pre-education and immediately post-education? In this section, I will detail the concepts, models, and theories used in the project. Relevance to nursing practice will also be discussed and the local context and relevant background presented. Finally, I will discuss the role of the doctoral student and project team.

Concepts, Models, and Theories

The ability of patients to maximize their QOL rests in part upon their ability to perform self-care activities like physical activity. The ability of an individual to take care of them self is important in managing cancer (Qian & Yuan, 2012). Hasanpour-Dehkordi (2016) performed a retrospective review study that revealed education about self-care is one of the core features necessary for a cancer patient to care for him- or herself. Patients who receive education regarding self-care activities, such as exercise, are more engaged and have an increased QOL when measuring against patients who receive no such education (Masoudi et al., 2014). Nurses are in an ideal position to provide necessary

education about QOL interventions to patients, but they require training and a rationale for the intervention. An educational model is necessary to address both concerns.

The model I used to guide this doctoral project was the attention, relevance, confidence, and satisfaction (ARCS) model of motivational design theories developed by Keller (1987, 2009). The model details steps for encouraging and maintaining motivation in the learning process. The four steps are encapsulated in the words that make up the acronym of ARCS (Keller, 1987).

The first step, attention, involves both perceptual and inquiry arousal (Keller, 1987). The focus of this step is to gain the attention of the student and make them curious about the problem (Keller, 1987). In this step in the project, I used active participation, specific real-world examples, and Socratic questioning to draw learners in to an awareness of the problem. The attention step brought into focus the scope of the problem, the impact upon patient QOL, and the evidence to date.

The second step is relevance, and this step has as its focus identification with the problem on the part of the learner: Learners find personal meaning in the problem that makes it personally applicable or important Keller, 1987). Modeling is a technique used in this step, and it was a powerful tool for the project: Fitness is desirable for nurses as well as patients undergoing radiation therapy. According to Keller (1987), present worth and future usefulness are also important techniques because they force learners to reflect upon what the intervention will do for them in the present and in the future. Experience is one of the most powerful components of relevance (Keller, 1987).

Confidence is the third step in the model. Nurses must feel that they have a firm grasp on the problem and its solutions. As part of this step, I presented specific objectives for the educational intervention. The objectives had to be reasonable and obtainable for nurses to feel successful in passing along the knowledge they gained. As part of this step, nurses also had some sense of control over how they provide the education they received. This consideration was also in keeping with the relevance step.

The final step in the model is satisfaction. Education for education's sake was not the ultimate goal of this project; the ultimate goals were improvement of patient well-being and QOL by increasing physical activity and decreasing fatigue. The nurses gained satisfaction with the education they received because they may use their knowledge in a practical sense. Patients will benefit from the education the nurses received, which in turn makes the educational intervention rewarding.

Relevance to Nursing Practice

Physical activity benefits patients diagnosed with cancer by reducing fatigue, improving QOL, decreasing risk of cancer recurrence, and decreasing the risk for death in many different cancers (Rock et al., 2012). According to Ogunleye and Holmes (2009), four observational studies have confirmed an improved QOL and decreased mortality rate in patients with breast cancer who are physical active. A systemic review study showed a 15% to 20% decrease in breast cancer risk with higher physical activity that had an even higher correlation with postmenopausal breast cancer patients (Monninkhof et al., 2007). In breast cancer patients, elevated insulin levels have been predicted to decrease survival

in breast cancer patients; physical activity can help lower both insulin and estrogen levels (Ogunleye & Holmes, 2009).

In another prospective observational study, physical activity was found to decrease the risk of death in colorectal cancer (Meyerhardt et al., 2006). Cancer-related fatigue can affect 70%-100% of the cancer population and has a significant negative impact on a patient's physical and mental health, which can last for months to years following treatment (Cramp & Daniel, 2012). A meta-analysis study showed that exercise could help with fatigue levels (Brown et al., 2011). The ONS (2016) has recognized the importance of physical activity in cancer patients and developed a campaign to emphasize exercise as an intervention, the "Get Up, Get Moving" campaign. Recommendations from this ONS campaign include a general exercise guideline for cancer survivors and physical activity log sheet. The gap between education and practice has been recognized by the ONS as an important issue requiring remediation.

Local Background and Context

Cancer is a significant health problem for the project setting. The CDC (2016) reported that cancer rates in the project setting's geographical location are higher when compared to the national rate in specific cancers, including breast, prostate, melanoma, urinary/bladder, and thyroid. For cancer death rates, the project location's state is higher than the national rate on breast, pancreatic, ovarian, leukemia, liver and intrahepatic bile duct, and uterine cancers (CDC, 2016). In 2016, there were approximately 30,990 new cancer cases for the project location's state, while in the United States, there are estimated to be 1,685,210 new cases of cancer per year (National Cancer Institute,

2017b). Even though the numbers from the project location's state only calculates to 1.8% of all new cases of cancer in the United States, they translate to 1 new case of cancer per every 177 person in the state, per year (United States Census Bureau, 2016). According to the World Cancer Research Fund, 20% of all cancers diagnosed in the United States are related to physical inactivity, increased body fatness, excess alcohol consumption, and/or poor nutrition (American Cancer Society, 2016). These statistics, when taken together, imply that for the project location, annually there are approximately 6,200 people in the state for whom a new cancer diagnosis might be preventable. Increasing physical activity levels is an inexpensive and simple intervention that may improve the health of the people of the state and cancer patients specifically. For example, Ibrahim and Al-Homaidh (2010) completed six meta-analysis studies that showed a decreased mortality risk for breast cancer patients who participated in physical activity.

The project site was in a large hospital complex in an inner city. The setting was an outpatient radiation oncology clinic located on the same property as the hospital. The clinic cares for local, regional, and international patients. Typical cancer diagnoses for the site include head and neck, breast, gastrointestinal, prostate, sarcoma, lymphoma, central nervous system, brain, and gynecological. The clinic consults with an affiliated physical medicine and rehabilitation department that is available for collaboration and treatment. Clinic staff consists of nurses, physicians, and other clinical staff.

Role of the DNP Student

At the time of the study, I was a nurse manager at the hospital system. One of the expectations for all nurse managers is promotion of positive patient outcomes by process improvement. The majority of oncology patients at the project site suffer deconditioning due to cancer and its treatment, potentially leading to poor patient outcomes. Education of nursing staff about the benefits of exercise in preventing deconditioning was a process improvement intervention to promote positive patient outcomes. My overall role in the doctoral project was to plan, implement, and analyze the education program.

Planning involved establishment of program objectives, development of the educational curriculum, and creation of pre- and postintervention assessment tools. I synthesized program objectives using evidence from the literature with a specific focus upon education regarding the benefits and recommendations of exercise in cancer patients. The JHNEBM and ONS guidelines were used to guide the synthesis of the program at every step (Johns Hopkins Medicine, 2017; ONS 2016). I sought best practices in the literature that address education of nurses about the benefits of exercise as it pertains to cancer treatment-related fatigue. Sources of evidence included original research articles, review articles, and meta-analyses of existing research (see Appendix A: Literature Review Matrix). My strategies to obtain the evidence consisted of utilization of research and library databases including PubMed and Google Scholar with keywords like *cancer and exercise, cancer and quality of life, cancer and fatigue, cancer, exercise, and quality of life, cancer and exercise education,* and *nurse education and cancer patients*. Keywords identified in relevant evidence in the literature were used for

this project in further literature searches to broaden the scope of the literature search and include as many relevant articles as possible. Subject matter experts, like physical therapists and physical medicine and rehabilitation specialists, contributed anecdotal clinical experience to the project. Such evidence was considered to be Level 5 (see Appendix B: Level of Evidence Guide).

Implementation of the education program did not require recruitment. The project setting had approximately 14 nurses who were the target audience for the program. The first step of implementation was completion of the preintervention knowledge assessment by nurses. The knowledge assessment had 10 questions that tested knowledge of topics specifically addressed as part of the education intervention. I saved the preintervention assessments but did not review them with nurse participants. The assessments were completed face-to-face. No validated preintervention assessment tool existed; therefore, I developed one using guidelines established in the literature (International Training and Education Center for Health, 2008; Johns Hopkins Medicine, 2017). The educational program intervention was the second step in the intervention. The education was provided using the learning objectives as guiding points. The educational presentation is provided in Appendix C. The third step of implementation was completion of a postintervention knowledge assessment. The assessment was completed by participants face-to-face immediately following the education. The postintervention assessment period also provided nurses the opportunity to provide feedback about the program and its relevance using a summative evaluation.

I designed the project with expansion in mind as a future direction. The current project was on a small scale to minimize impact upon operations at the project site. I hypothesized that the positive benefits to patients were to be inferred, if not apparent, and would allow the project to grow in size and scope. The long-term objective of this project was to investigate the impact of physical activity, such as exercise, on patient fatigue and QOL levels in outpatients receiving cancer treatment. As part of that study, I utilized a mobility-screening tool developed based upon evidence in the literature to measure the physical functioning levels of patients before, during, and after treatment. Implementation of the tool will compare the role physical activity has on patient outcomes and QOL indicators.

Role of the Project Team

The project team included the institution's Nursing Research Committee (NRC), physical medicine and rehabilitation clinicians, and a clinical nurse specialist. Stakeholders that I identified, but who were not involved in the project, included radiation oncology patients and their community supports. Physical medicine and rehabilitation clinical staff provided expertise on the forms of fitness to be promoted by the program and guidance when referral for more intensive physical fitness was warranted.

The project team met to discuss the project concepts, background evidence and rationale, and develop the educational program according to the established objectives. Once the educational program was formalized and Institutional Review Board (IRB) approval was gained from both Walden and the project site (Walden IRB Approval

Number 11-08-17-0068261 and project site IRB Approval Number 00147107), I implemented the educational intervention. Following collection and complete synthesis of the data, I will communicate results to departmental leadership. Implementation of an education program into regular clinic operations is likely to gain the support of leadership with the presence of evidence as to its benefit. The project team will also refine the educational program and assessment tools for future iterations based upon feedback received from participants. A timeline for the project is provided in Figure 1. The project ran for 3 weeks.

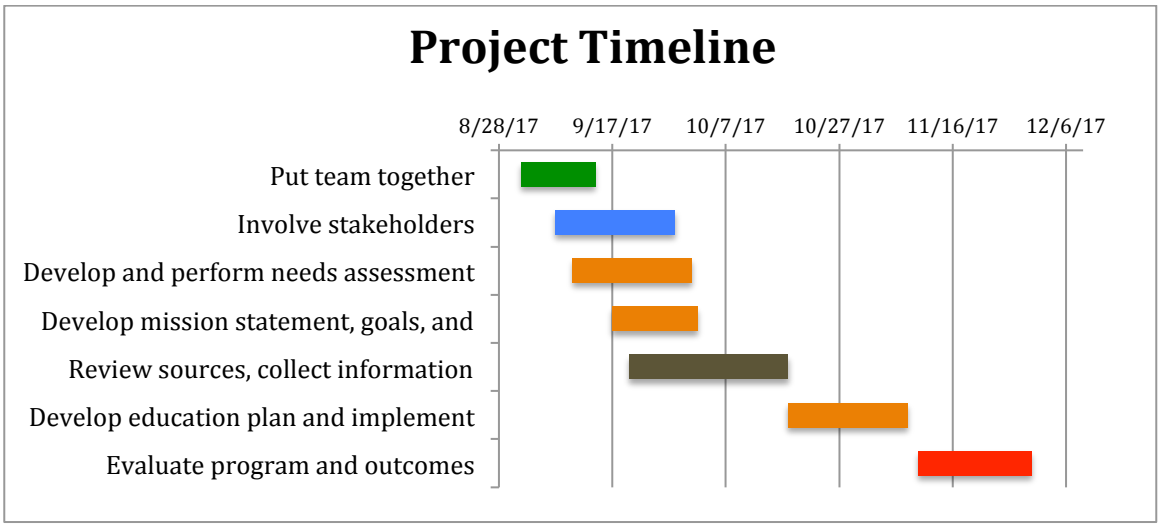

Figure 1. Timeline for the project.

Summary

In summary, evidence exists in support of the conclusion that physical activity can improve QOL and fatigue levels and prevent further illness in cancer patients undergoing treatment (Kirshbaum, 2007; Spence, Heesch, & Brown, 2009). Radiation oncology patients at the project site were not routinely educated regarding the benefits

and recommendations of exercise in part because nurses caring for them were not provided with education about exercise and its benefits. I designed this doctoral project as an educational program for nurses using the ONS recommendations and evidence from the literature. Along with the project team, I developed learning objectives and an assessment tool as part of the intervention. The program was implemented and a postintervention assessment was conducted that included nurse input on the relevance and effectiveness of the educational program. In the next section the practice problem, sources of evidence, and analysis methods will be discussed.

Section 3: Collection and Analysis of Evidence

Introduction

In this doctoral project, I addressed a gap in nursing practice by developing and providing an educational program with pre- and postknowledge assessments about the benefits and recommendations of exercise for patients undergoing radiation therapy. In this section, I will present the practice-focused question and the plan to collect and analyze data. Sources of evidence and their relationship to the purpose of the project will be clarified. The systems I used to record, track, organize, and analyze evidence will be described, and the procedures used to assure reliability and validity of gathered data will be discussed before concluding the section.

Practice-Focused Question

The local problem was insufficient education to nursing staff regarding the merits of physical activity for patients undergoing cancer treatment. Evidence indicates patients are at a greater risk for poorer outcomes and a QOL less than what may be possible if physical activity were part of their routine (Booth et al., 2012). Patients who engage in regular exercise have better QOL and outcomes than patients who do not engage in such activities (Albrecht & Taylor, 2012). The practice question was: In the oncology outpatient setting within an urban academic health care system in the eastern United States, will oncology nurses show an improvement in their knowledge on the benefits of exercise for patients during and after cancer treatments when comparatively measured pre-education and immediately post-education? I hypothesized that a formalized educational program about the importance and recommendations of exercise would

provide nurses with knowledge to disseminate to patients under their care. The effectiveness of the program was assessed to determine if it met the stated goals and objectives of the project for the nursing staff's educational need on exercise.

Sources of Evidence

The tools I used to collect the data for this project included pre- and postimplementation knowledge assessments items. The tool is provided in Appendix D. The preimplementation assessment was given to the nurses before the education, and the postimplementation assessment was given immediately after the educational intervention. I created the pre- and postimplementation assessments utilizing ONS (2016) and ITECH (2008) guidelines and in collaboration with a physical therapist clinician from the physical medicine and rehabilitation department who was a subject matter expert. The design process also included a PhD nurse leader with experience in validating tools.

Nurses were asked to voluntarily participate in this project to maintain ethical standards. All participants were able to withdraw from the project at any time. Many nurses at the project site expressed a desire to be a part of this project before its implementation, so fortunately there were no withdrawals. Walden IRB approval was predicated upon IRB approval at the project site. In order to receive approval from the host-site, approval from the NRC was required. Once the NRC gave approval, it was submitted to the host-site IRB. The host-site IRB approved the project, which paved the way for Walden IRB approval.

Analysis and Synthesis

The preintervention assessment occurred before the educational intervention to get a baseline level of knowledge of the individual nurse. The knowledge assessment had 10 questions that tested knowledge of topics specifically addressed as part of the education intervention. No reliability and validated preintervention assessment tool existed for the educational intervention of the project; therefore, I developed one using the guidelines established in the literature (see International Training and Education Center for Health, 2008).

Completion of a postintervention knowledge assessment was included in the data collection. The postintervention assessment also provided nurses with the opportunity to give feedback about the program and its relevance. The assessments were the data source and I entered the responses into a Microsoft Excel spreadsheet for transposition into the statistical analysis software. The raw data entered onto the Excel spreadsheet were double-checked by a doctoral level health care provider to ensure accuracy and reliability of the data entries. There was no identifying information associated with the raw data.

Data in the spreadsheet included the total number of answers correct for each respondent for each assessment. I analyzed the responses for the entire tested population for trends. The participants included 14 outpatient oncology nurses. Differences in nurse knowledge before and after the intervention were examined, and specific questions were analyzed for the number of inaccurate responses.

For statistical data analysis, I used the IBM SPSS Version 24 statistical package. A paired-samples *t* test was used to analyze the data due to the small sample size. In

addition, I queried one group of participants, both before and after the intervention, at two different points in time. The null hypothesis was that the pre- and postintervention assessment results would be the same. The alternative hypothesis in this case was that the results were different, meaning that the education intervention had a positive impact. Specific questions were analyzed for the number of inaccurate responses. Questions with a high number of incorrect postintervention responses may reflect a gap in the educational program, a misunderstanding of the question on the part of respondents, or a poorly-worded question requiring rewriting. I employed the JHNEBP (2017) as part of this phase of the project.

As part of the posteducation assessment, I provided a summative evaluation to participants. Questions focused on the presenter, educational activity, and personal impact. The postactivity assessments were examined for overall participant satisfaction with the program. The evaluation can be found in Appendix E.

Summary

I incorporated evidence-based information into the project to develop an educational program for nurses in radiation oncology. The educational element of the program instructed nurses on the importance of physical activity during and after cancer treatment. Before and following education, nurses were assessed for their level of knowledge. I recorded pre- and postintervention responses and analyzed them for trends. ONS and JHNEBM tools were used to develop and analyze the educational program and its assessment tools. I hypothesized that providing formal education to nurses on the importance of physical activity will lead to a change in practice, which in turn will lead to

better patient outcomes and improved patient QOL. In the next section, the findings will be presented and recommendations and implications will be discussed.

Section 4: Findings and Recommendations

Introduction

Cancer treatments involving radiation can be exhausting, and the majority of patients undergoing radiation therapy experience fatigue (Hoffman et al., 2007). These patients may become deconditioned due to their fatigue, leading to worsening health, more physical health problems, and an increased risk of more diseases (Booth et al., 2012). Evidence has shown that physical activity can significantly help with strength and activity impairments, regardless of the cancer type (Kruk & Czerniak, 2013). Evidence suggests patients undergoing radiation treatment should be as active as they can tolerate (Fong et al., 2012).

There was no formalized education regarding the benefits of exercise provided at the project site by nurses to patients receiving radiation treatment for cancer. Insufficient staff education regarding the benefits and recommendations of physical activity during cancer treatment is a gap in nursing practice. The practice-focused question for the project was: Will oncology nurses show an improvement in their knowledge on the benefits of exercise for patients during and after cancer treatments when comparatively measured pre-education and immediately post-education? The purpose of this doctoral project was to address the educational gap in nursing practice by implementing a formal educational program to nurses in a hospital-based outpatient oncology setting.

The sources of evidence for evaluation of this project were pre- and postimplementation knowledge assessments completed on paper. The tool is provided in Appendix D. The preimplementation assessment was administered to the nurses before

the education, and the postimplementation assessment was given immediately after the educational intervention. I created the pre- and postimplementation assessments utilizing ONS (2016) and ITECH (2008) guidelines and in collaboration with a subject matter expert. Following collection of the assessments, data were entered into Microsoft Excel for Mac (Version 14.7.3), and IBM SPSS Version 24 was used for data analysis. I used nonparametric inferential statistics paired *t* tests to examine the null hypothesis that the pre- and postintervention assessment results were the same.

Findings and Implications

A total of 14 nurses participated in this project. Demographic information is presented in Table 1. All of the respondents were women and 92.9% were Caucasian. Thirteen of the respondents had at least a baccalaureate level of education. The average age of participants in the project was 36.7 years old with an average of 11 years of nursing experience and 7 years of oncology nursing experience. The nurses reported 48.4% of all patients seen by them were given education on the topic of physical activity and only 13.9% of patients asked them directly for information on the topic.

Table 1

Demographics

	Number	Range	*M*	*SD*
N	14			
Sex				
Female	14			
Race				
Caucasian	13			
African American	1			
Educational Level				
AA	1			
BS	9			
MS	4			
Age		25–61	36.71	12.02
Years as a Nurse		2–35	11.04	10.96
Years in Oncology		0.5–34	6.96	8.80
Average				
Patients/week		5–70	31.43	16.22
Patients given info		0–35	15.21	9.64
Patients asking		0–20	4.36	5.43

The total number of correctly answered questions for each respondent for both the pre- and posteducation assessments is listed in Table 2. Twelve respondents had either no change or an increase in their scores from the pre- to the posteducation assessment. I conducted a paired-samples *t* test to evaluate the impact of the educational intervention on nursing knowledge. There was a statistically significant improvement in nursing knowledge from preintervention ($M = 6.86$, $SD = 1.027$) to postintervention ($M = 8.36$, $SD = 1.447$), $t(13) = 4.007$, $p < 0.05$ (two-tailed). The mean increase in scores was 1.5 with a 95% CI ranging from 0.69 to 2.31. The Cohen's *d* of 1.26 indicates a large effect size.

Table 2

Pre- and Posteducation Assessment Scores

	Pretest (Correct)	Posttest (Correct)	Change in score
Respondent 1	6	9	+3
Respondent 2	6	8	+2
Respondent 3	6	9	+3
Respondent 4	7	9	+2
Respondent 5	6	9	+3
Respondent 6	8	9	+1
Respondent 7	8	9	+1
Respondent 8	8	10	+2
Respondent 9	5	7	+2
Respondent 10	8	9	+1
Respondent 11	8	8	0
Respondent 12	6	5	-1
Respondent 13	7	10	+3
Respondent 14	7	6	-1
M	6.86	8.36	
SD	1.03	1.45	

Table note: *t* Test 4.007 ($p < 0.05$)

Interestingly, the mean postintervention score (8.36) increased in spite of two respondents having a decrease in their posteducation assessment scores. I also examined individual questions for trends in order to improve the assessment tool in future administrations. Table 3 lists each question and its pre- and posteducation intervention performance. The majority of questions saw either an increase or no change in their posteducation assessment scores as compared to the preeducation assessment scores. When the raw data were examined, I found that Respondent 12 answered both Questions 1 and 6 correctly in the preeducation assessment and incorrectly in the posteducation test.

This respondent was also one of the two who experienced a decrease in their scores from pre- to posteducation assessment.

Table 3

Individual Question Performance

	Times Correct (Pre)	Times Correct (Post)	Change
Question 1	11	10	-1
Question 2	14	14	0
Question 3	9	14	+5
Question 4	14	14	0
Question 5	1	9	+8
Question 6	12	11	-1
Question 7	11	11	0
Question 8	3	6	+3
Question 9	10	14	+4
Question 10	11	14	+3

I developed this project using guidelines from the ONS, and it is the first of its kind at this institution to evaluate the effect of education on nurses' related practices. The implication of these findings is that education to nurses in radiation oncology regarding the benefit of exercise to patients undergoing radiation therapy leads to an increase in their knowledge on the topic. Results from the project supported the hypothesis that the educational intervention is effective, at least in the short-term. As I mentioned earlier, patients desire education and incorporate recommendations that promote their health and well-being (Mina *et al*, 2012).

Retention of the education in the long-term and its ultimate impact upon patient well-being were beyond the scope of this project and are the logical next steps in evaluating the project. Evidence suggests physical activity promotes well-being, and ultimately, QOL in patients with cancer who are undergoing radiation therapy (Knols,

Aaronson, Uebelhart, Fransen, & Aufdemkampe, 2005). Patients need education on the specifics of physical activity and nurses are in an ideal position to provide the desired education. My analysis of the results of the project suggests it was successful in imparting knowledge to nurses, which can be passed on to patients.

The summative evaluation at the conclusion of the intervention provided opportunity for participant feedback. The results are listed in Table 4. The majority of respondents reported strongly agreeing (11 participants out of 14) or agreeing (2 participants out of 14) with the presenter's effectiveness in delivering the presentation. The majority of respondents reported favorable impressions of the activity itself, with 12 rating it as excellent and one rating it as good. Personal impact on respondents was also high, with 11.7 rating an excellent personal impact and 1.3 rating a good impact. Only two fair scores were given, one for the quality of the program and the other for handouts and/or resources. There were no poor ratings.

Table 4

Summative Evaluation Results

	Strongly Agree (4)	Agree (3)	Disagree (2)
The presenter met the objectives.	13	0	0
The presenter covered the material in a way that was clear, understandable and meaningful.	12	1	0
The format was instructive and engaging.	10	3	0
There was enough time to cover the topics.	10	3	0
Educational Activity Rating	**Excellent (4)**	**Good (3)**	**Fair (2)**
Organization of the program	13	0	0
Content of the program	12	1	0
Quality of the program	10	2	1
Conference Room/Learning Environment	12	1	0
Handouts/Resources	11	1	1
Overall Program Satisfaction	11	2	0
Personal Impact	**Excellent (4)**	**Good (3)**	**Fair (2)**
Physical Activity is an important part of health promotion.	13	0	0
I feel adequately prepared to provide education regarding physical activity to my patient.	10	3	0
I will use the information obtained from this training in practice.	12	1	0

Recommendations

The gap in nursing practice that I identified for this project was the absence of a formal education program to radiation oncology nurses regarding the benefits of physical activity for patients undergoing radiation treatment. The tools developed for this project included an assessment tool and an educational intervention. Both the tools and the intervention are included in the appendices (see Appendices C and D). Based upon my

analysis of the project, the tools validated the objective of addressing the identified practice gap.

All radiation oncology nurses associated with the project site should receive the education. I recommend that affiliated hospitals should also have the opportunity to provide the education to their radiation oncology nurses. The educational intervention should be studied for its validity in other oncology settings associated with the project site, such as inpatient and medical oncology. If the evidence supports its benefit to these populations of nurses, it may form the basis for a broader standard of application (i.e., regional and national). Implementation of this intervention, based upon the results, has been requested by clinical or nursing administration at the project site. Specifically, I was asked to present the educational intervention as part of all subsequent oncology nursing orientations.

Contributions of the Doctoral Project Team

The NRC provided valuable feedback on the wording of the assessment tools. They also provided guidance with respect to negotiation of the project site's IRB process. Representatives from physical medicine and rehabilitation provided resources to refine the educational presentation including feedback on the education draft. They provided pocket-sized laminated cards with quick reference information for the nurses in the project. The Clinical Nurse Specialist also provided valuable feedback on the education and assessment tools.

Strengths and Limitations of the Project

An immediate and positive outcome of the project is the provision of necessary information helpful to nurses that was not available prior to the project. The assessments of this project took a brief amount of time to administer (about 5–10 minutes) and the educational activity was also brief (approximately 20 minutes) and thus not a substantial time-demand for busy nurses. This project was evidence-based as well as being based on guidelines from the ONS. Another strength of the project is its portability: Nurses carry the information with them in the form of education and have the quick reference cards. Staff interest in the topic was another strength. Nurses who participated in the program were glad to receive the information and verbalized their intent to use it in the care of patients. The project helps nurses practice to the full scope of their licenses as it addresses wellness, health promotion, and disease prevention. A final strength of the project was its acceptability by nurses, administration, and other health care providers (i.e., it did not meet with resistance to change).

I also noted several limitations of the project. The population of participants was small ($N = 14$), so generalizations are not possible. Another limitation was the need to create the assessment tool as none was available. I made efforts to write questions as clearly and with the most validity as possible. Content experts, including a clinical nurse specialist in radiation oncology, a physical therapist, and the director of nursing for oncology, reviewed the tool before use. However, analysis of the data suggested that some of the questions (i.e., Questions 5 and 8) may need to be reworded or the material

made clearer in the educational presentation. Finally, while the impact of education on nurses was a focus of the project, I did not examine the impact upon patients.

Section 5: Dissemination Plan

Introduction

The plan to disseminate this work to the larger institution is to present a poster at the Nursing Scholars Day in 2018. Nursing Scholars Day is a conference that celebrates innovation, discovery, and leadership among nursing colleagues at the project site's hospital. Scholars Day includes podium and poster presentations, award ceremonies, and is well attended by nurse colleagues at the institution. In addition, I will be submitting an abstract to the ONS's Annual Conference. Thousands of oncology nurses from around the nation and world attend this conference to learn the latest cancer education, treatments, and symptom management strategies. One such method of dissemination will be a poster (see Appendix F).

Analysis of Self

The project provided me with an excellent opportunity to integrate the roles of project manager, practitioner, and scholar. In the role of practitioner, it was necessary for me to identify a gap in practice that had the potential impact to improve practice and patient outcomes. As a scholar, I explored the practice problem to determine what solutions were already available, and finding none, pursuing the best available evidence in the literature to create a solution. As project manager, I learned the steps of designing, implementing, and analyzing a program. This integration allowed me to conduct a project that now has perpetuation. I have been asked to present the educational materials at all oncology nursing orientations. The orientations are not limited to the project site or radiation oncology, as they include oncology nurses from inpatient and outpatient

services. In addition, leadership at the organization system level asked me to provide the exercise education program to nurses at affiliated locations.

Summary

Cancer is a devastating disease affecting millions of people worldwide (Ma & Yu, 2006). Recovery from cancer involves arduous and taxing treatments, including surgery, chemotherapy, and radiation therapy (National Cancer Institute 2017c & 2017d). Both the disease and its treatments leave most cancer patients with fatigue significant enough to limit their physical activity (Hofman *et al,* 2007; Booth *et al*, 2012; Kassab, 2013). The literature is clear that physical activity in patients, with or without cancer, is beneficial in improving overall health and wellness and can prevent or delay chronic disease (Booth, Roberts, & Laye, 2012). Evidence also suggests physical activity can prevent disease, even cancer recurrence (Kruk & Czerniak, 2013).

Unfortunately, many patients have been instructed to avoid activity and to rest, in spite of evidence supporting the benefits of activity. Nurses are in an ideal position to provide education about activity to patients undergoing cancer treatment. While there are resources, such as the ONS website, no formal educational program regarding the benefits of physical activity for patients undergoing cancer treatment, such as radiation, existed for nurses. The purpose of this doctoral project was to address that nursing practice gap.

Using sources of evidence in the literature, subject matter experts, and online resources, I developed an educational program to provide information about physical activity for radiation oncology nurses. An assessment tool was developed to measure the

effectiveness of the educational intervention in imparting the desired information, and analysis of the results of the intervention indicated it was successful in increasing nursing knowledge on the topic. While results cannot be generalized, I hypothesize that the educational intervention will be useful for nurses caring for all patients with cancer, regardless of their cancer or treatment type. The major implication for this project is that educational interventions for nurses can lead to nurse empowerment, self-confidence, and the skill to impart that knowledge to cancer patients under their care. Ultimately, I hope that patients will use that knowledge to increase their physical activity and promote their own well-being.

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Appendix A: Literature Review Matrix

Full APA Reference	Theoretical/ Conceptual Framework	Research Question(s)/ Hypotheses	Research Methodology	Analysis & Results	Conclusions	Grading the Evidence
Bicego, D., Brown, K., Ruddick, M., Storey, D., Wong, C., Harris, S. R. (2008). Effects of exercise on quality of life in women living with breast cancer: A systematic review. *The Breast Journal, 15*(1), 45-51.	Focus was on structured exercise programs lasting a minimum of 4 weeks in women with all stages of breast cancer.	Does exercise impact QOL in breast cancer patients at all stages of the disease?	Systematic review to examine the effect of exercise on quality of life. 9 RCT studies were examined. Seven different QOL tools were used within the 9 studies.	Strong evidence exercise positively influences QOL, effective strategy to improve QOL in women with breast cancer	Exercise positively impacts QOL in breast cancer survivors.	Level 1*
Brown, J., Huedo-Medina, T., Pescatello, L., Ryan, S., Pescatello, S., Moker, E., LaCroix, J.M., Ferrer, R., Johnson, B. (2012).	Exercise can be helpful in reducing depressive symptoms in cancer survivors.	Does examination of available evidence support the efficacy of exercise to reduce depressive symptoms in cancer survivors? Does it uphold this conclusion as	Review of RCT's that focused on exercise in cancer survivors and depressive symptoms as an outcome.	40 exercise interventions , 2,929 cancer survivor patients. Increases in weekly volume of aerobic exercise reduced depressive symptoms in a dose-	While exercise training provides a small reduction in depressive symptoms, weekly aerobic exercise leads to an increase in reduction of depressive	Level I*

Full APA Reference	Theoretical/ Conceptual Framework	Research Question(s)/ Hypotheses	Research Methodology	Analysis & Results	Conclusions	Grading the Evidence
The efficacy of exercise in reducing depressive symptoms among cancer survivors: a meta-analysis. *PLoS ONE*, 7, 1-9.		provided in a previous meta-analysis?		responsive fashion.	symptoms in a dose-related fashion.	
Cramp, F. and Daniel, J. (2012). Exercise for the management of cancer-related fatigue in adults. *Cochran Database System Review, 2*, 1-28.	Exercise can have a positive effect upon fatigue in cancer patients. Review of the literature on exercise and its effects on cancer-related fatigue during and after cancer treatment.	What is the effect of physical exercise on fatigue related to cancer?	Meta-analysis for cancer-related fatigue using a random-effects model. Only randomized controlled trials (RCT's) were included.	28 studies were identified for inclusion in the review=2083 participants. Exercise can help reduce fatigue both during and after treatment for cancer.	Exercise has some benefit in the management of fatigue both during and after treatment.	Level I*
Fong, D., Ho, J., Hui, B., Lee, A., Macfarlane, D., Leung, S., Cheng, K. (2012). Physical	Older studies have demonstrated the benefit of exercise in cancer patients, but newer studies have come out; a meta-	What is the best current evidence for the effects of physical activity on fatigue, physical function, and QoL in adult	Meta-analysis of RCT's, studies which looked at physical activity effects in adult patients who completed main cancer treatment.	34 RCT's, 22 focused on breast cancer patients. 48 outcomes in study, median duration of activity 13	Physical exercise has positive effects of fatigue, physical function, and QoL in breast cancer	Level I*

Full APA Reference	Theoretical/ Conceptual Framework	Research Question(s)/ Hypotheses	Research Methodology	Analysis & Results	Conclusions	Grading the Evidence
activity for cancer survivors: Meta analysis of randomized controlled trials. *British Medical Journal,* 344, 1-14.	analysis including more recent studies and only RCT's can provide more sound conclusions.	patients following cancer treatment?		weeks. Control groups were sedentary adults. Based on examination of studies of breast cancer patients, physical activity led to decreased fatigue, improved QOL, and diminished depression.	patients.	
Holmes, M. D., Chen, W. Y., Feskanich, D., Kroenke, c. H., Colditz, G. A. (2005). Physical activity and survival after breast cancer diagnosis. *Journal of the American Medical*	Physical activity decreases the incidence of breast cancer, but effect on survival unknown.	Does physical activity decrease risk of death in women with breast cancer when comparing to women who are not as physically active?	Prospective observational study, feedback from 2,987 female registered nurses diagnosed with stage I, II, or III breast cancer from 1984-1998.	Benefit of physical activity noticed in women with hormone-responsive tumors. MET (Metabolic Equivalent Task) >3 per week decreased risk of adverse cancer outcome. 1+ hours of walking/week had better survival	Physical activity after a breast cancer diagnosis can lower the risk of death-especially in women who had tumors with overexpressing estrogen and progesterone receptors.	Level II*

Full APA Reference	Theoretical/ Conceptual Framework	Research Question(s)/ Hypotheses	Research Methodology	Analysis & Results	Conclusions	Grading the Evidence
Association, 293(20), 2479-2485.				rates than those with less. Greatest benefit in women who walked 3-5 hours per week of average pace.		
Ibrahim, E. M., Abdelaziz Al-Homaidh, A. (2011). Physical activity and survival after breast cancer diagnosis: meta-analysis of published studies. *Medical Oncology, 28,* p. 753-765.	The role of pre- or post-diagnosis physical activity on breast cancer deaths or on all causes mortality among patients with breast cancer has been inconsistent.	What is the role of physical activity on breast cancer outcome?	Meta-analysis that included 12,108 women with invasive breast cancer, inclusion criteria were studies looking at potential effect of physical activity on breast cancer outcome.	Pre-diagnosis physical activity appeared to reduce breast cancer mortality among those with BMI <25 kg/m^2. Pre-diagnosis physical activity (IH-PA) significantly reduced all causes mortality by 18%. All levels of physical activity reduced breast cancer mortality by	There is a beneficial effect of physical activity on breast cancer outcome.	Level I*

Full APA Reference	Theoretical/ Conceptual Framework	Research Question(s)/ Hypotheses	Research Methodology	Analysis & Results	Conclusions	Grading the Evidence
				approximately 30% and decreased all causes mortality by 41%.		
McNeely, M., Campbell, K., Rowe, B., Klassen, T., Mackey, J., & Courneya, K. (2006). Effects of exercise on breast cancer patients and survivors: a systematic review and meta-analysis. *Canadian Medical Association Journal, 1*75(1); 34-41.	Exercise can have a positive benefit to quality of life in breast cancer patients. Summarization of the available evidence regarding the effects of exercise on breast cancer patients and survivors.	Does exercise help breast cancer patients and survivors of breast cancer in terms of quality of life and fatigue?	Systematic quantitative review of RCT's.	136 studies examined, 14 met the study inclusion criteria. Exercise led to statistically significant improvements in quality of life (QoL), as well as improvements in physical functioning and fatigue.	Exercise is effective in helping quality of life, fitness, and fatigue in breast cancer patients and survivors.	Level I*
Mishra, S., Scherer, R., Snyder,	Exercise can have a positive effect on QOL,	What is the effectiveness of exercise interventions	Review of RCT's and quasi-randomized, controlled clinical	56 trials with 4,826 subjects met inclusion	Moderate to vigorous intensity exercise	Level III*

Full APA Reference	Theoretical/ Conceptual Framework	Research Question(s)/ Hypotheses	Research Methodology	Analysis & Results	Conclusions	Grading the Evidence
C., Geigle, P., Gotay, C. (2015). The effectiveness of exercise interventions for improving health-related quality of life from diagnosis through active cancer treatment. *Oncology Nursing Forum, (42)*1; 33-53.	social functioning, and physical functioning in patients undergoing cancer treatment.	on overall QOL in patients undergoing or about to undergo cancer treatment?	trials.	criteria. People exposed to exercise interventions had greater improvements in QOL, fatigue levels, and social functioning at 12 weeks as compared to those without.	programs should be incorporated into the treatment plan for patients undergoing or about to undergo cancer treatment.	

* For explanations on the Levels of Evidence, please refer to Appendix B: Level of Evidence Guide.

Appendix B: Level of Evidence Guide

Level I: Experimental study/randomized controlled trial (RCT) or meta analysis of RCT

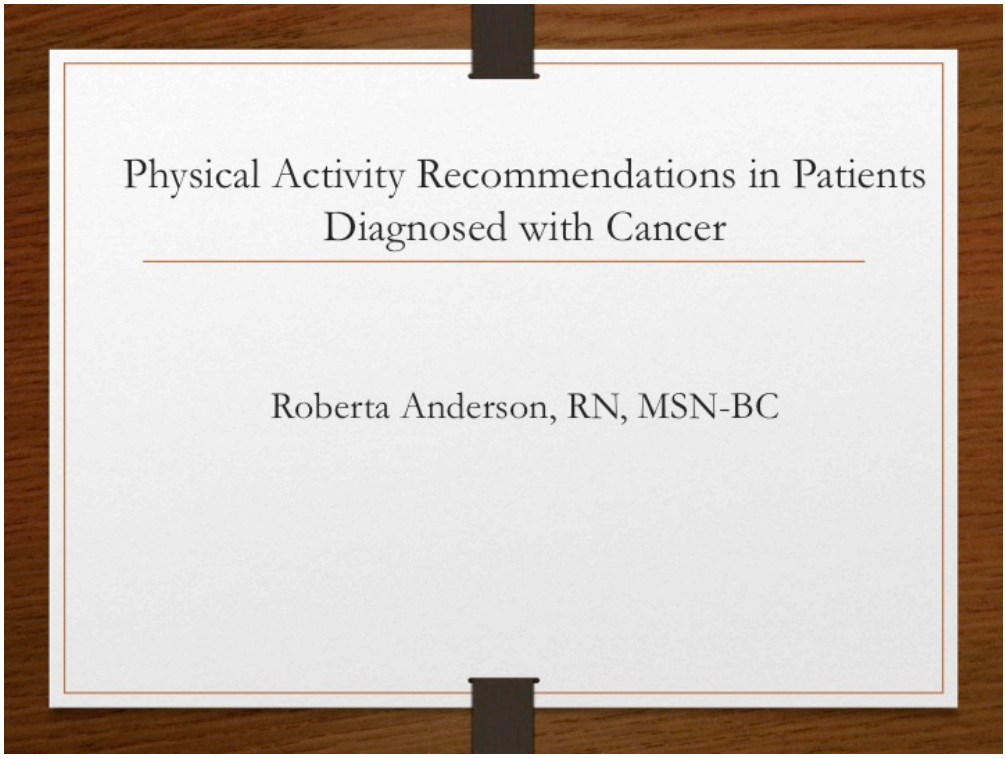
Level II: Quasi-experimental study

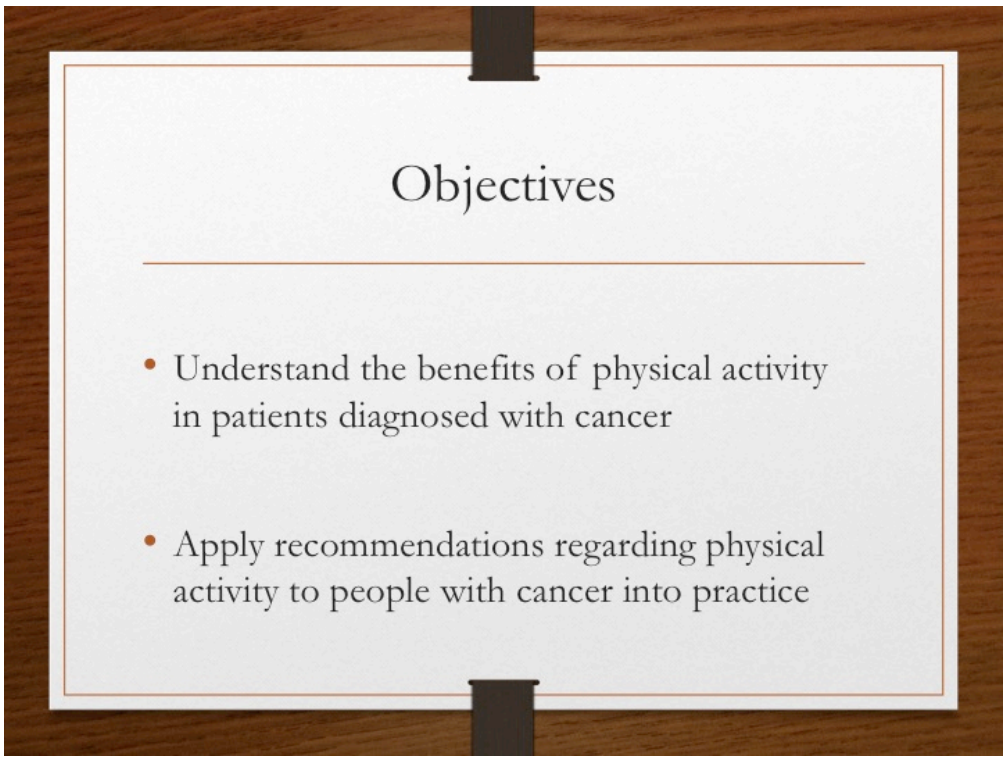
Level III: Nonexperimental study, qualitative study, or meta-synthesis.

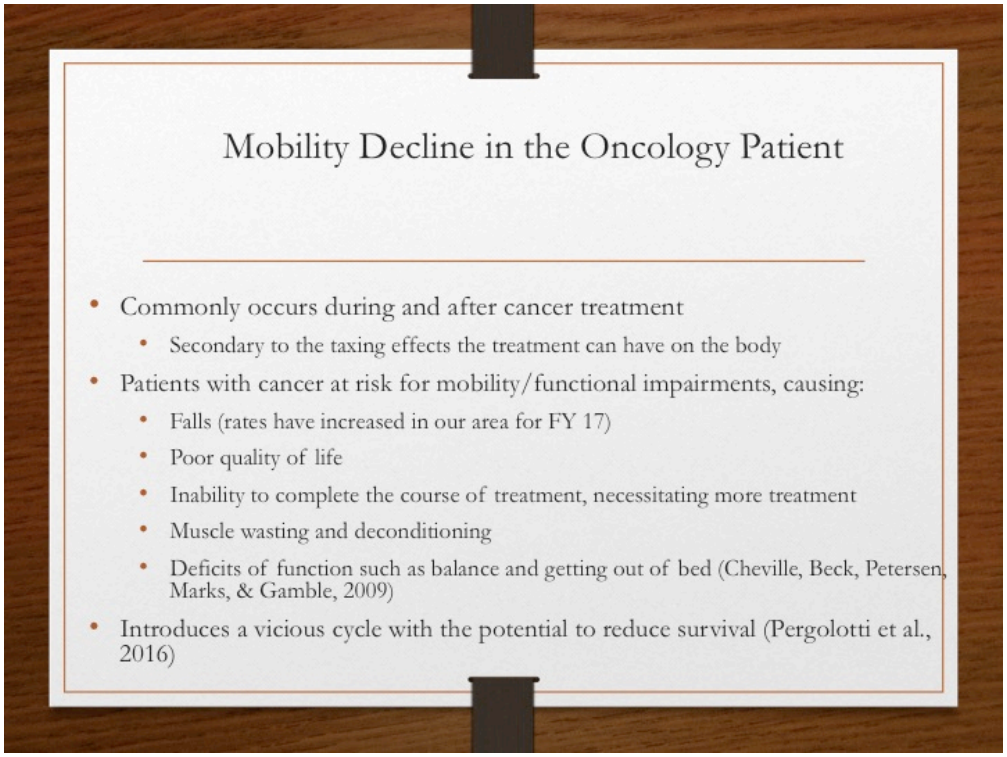
Level IV: Opinion of nationally recognized experts based on research evidence or expert consensus panel (systematic review, clinical practice guidelines)

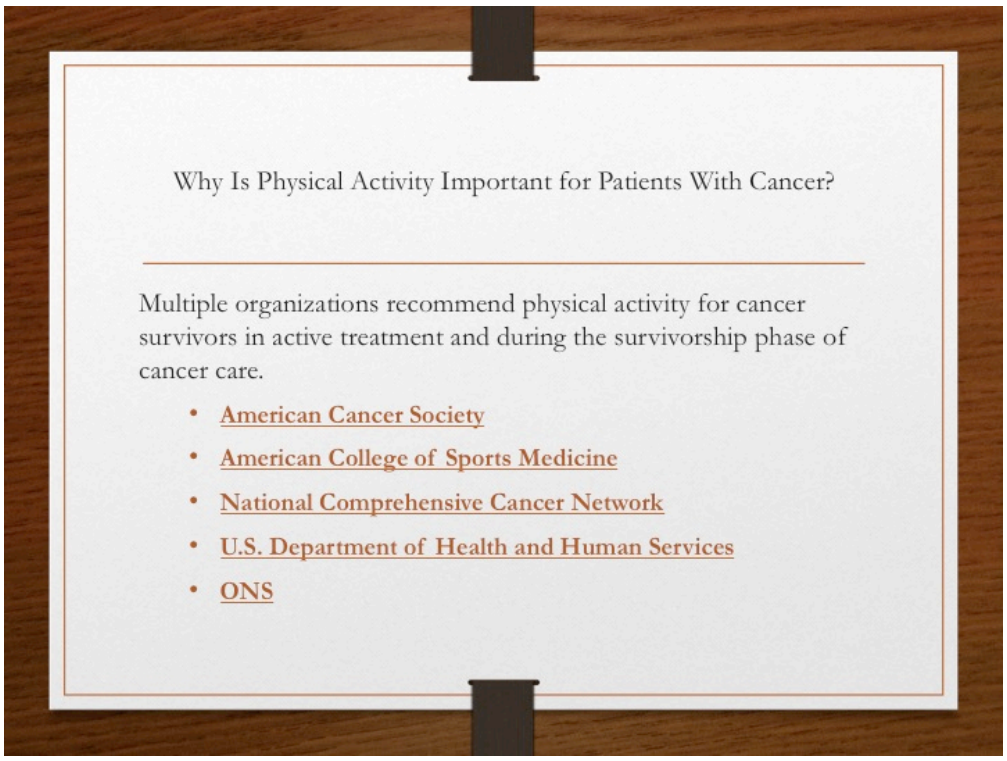
Level V: Opinion of individual expert based on nonresearch evidence. (Includes case studies; literature review; organizational experience e.g., quality improvement and financial data; clinical expertise, or personal experience)

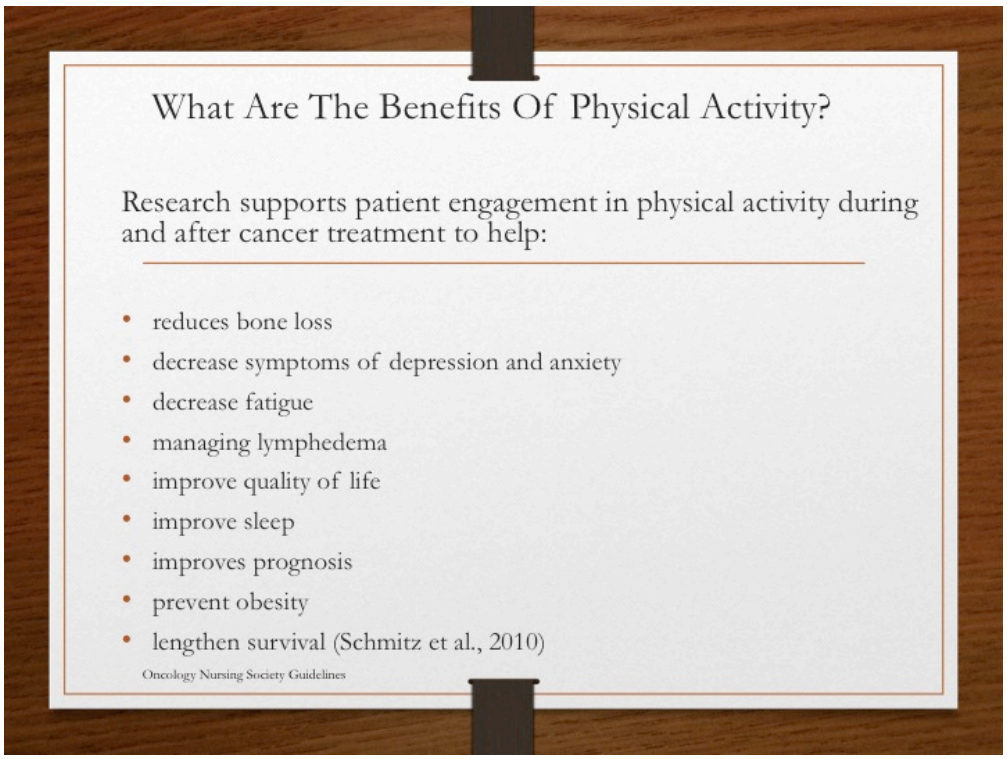
Appendix C: Educational Intervention

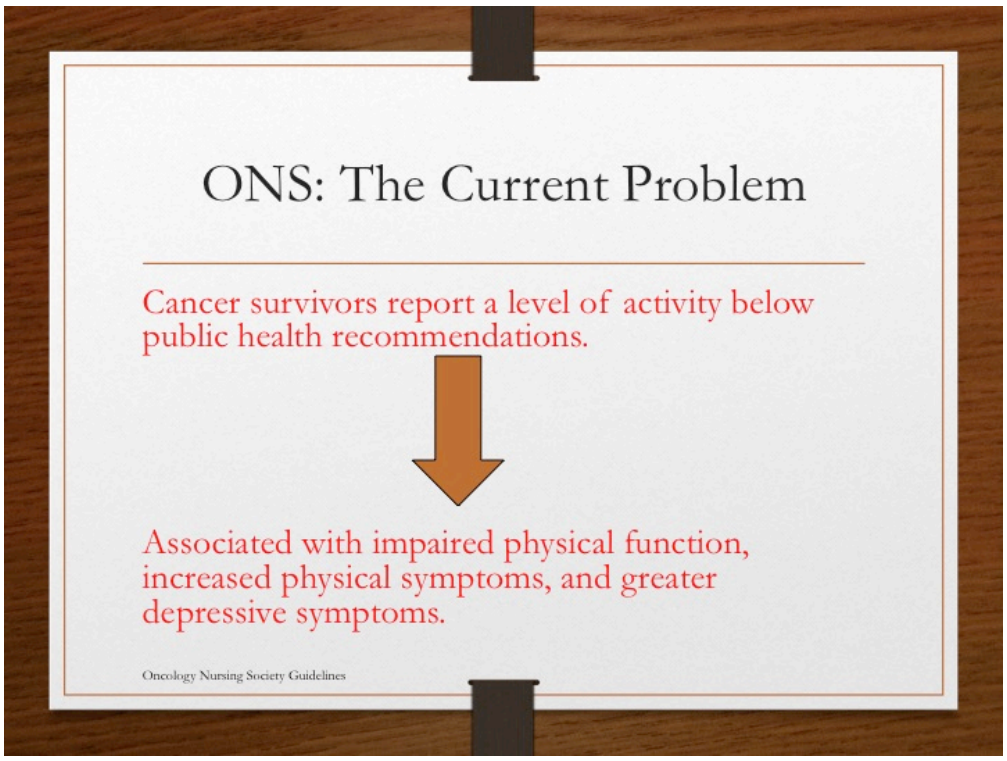


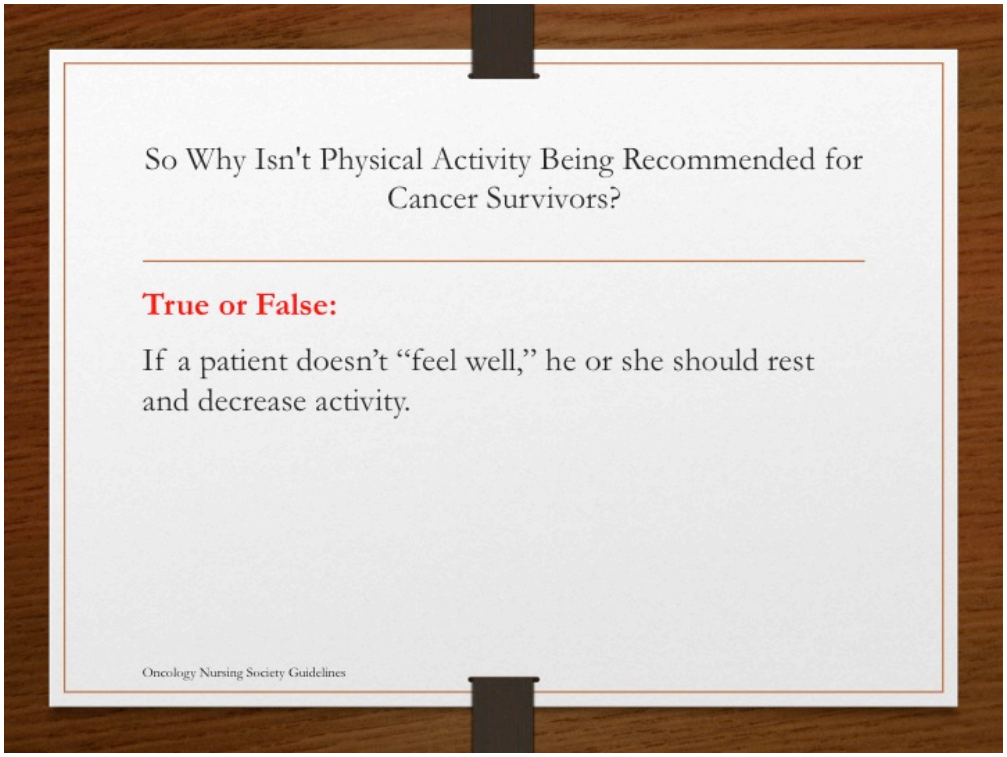

Objectives
Understand the benefits of physical activity in patients diagnosed with cancer
Apply recommendations regarding physical activity to people with cancer into practice


Mobility Decline in the Oncology Patient
Commonly occurs during and after cancer treatment
Secondary to the taxing effects the treatment can have on the body
Patients with cancer at risk for mobility/functional impairments, causing:
Falls (rates have increased in our area for FY 17)
Poor quality of life
Inability to complete the course of treatment, necessitating more treatment
Muscle wasting and deconditioning
Deficits of function such as balance and getting out of bed (Cheville, Beck, Petersen, Marks, & Gamble, 2009)
Introduces a vicious cycle with the potential to reduce survival (Pergolotti et al., 2016)


Why Is Physical Activity Important for Patients With Cancer?
Multiple organizations recommend physical activity for cancer survivors in active treatment and during the survivorship phase of cancer care.
American Cancer Society
American College of Sports Medicine
National Comprehensive Cancer Network
U.S. Department of Health and Human Services
ONS


What Are The Benefits Of Physical Activity?
Research supports patient engagement in physical activity during and after cancer treatment to help:
reduces bone loss
decrease symptoms of depression and anxiety
decrease fatigue
managing lymphedema
improve quality of life
improve sleep
improves prognosis
prevent obesity
lengthen survival (Schmitz et al., 2010)
Oncology Nursing Society Guidelines


ONS: The Current Problem
Cancer survivors report a level of activity below public health recommendations.
Associated with impaired physical function, increased physical symptoms, and greater depressive symptoms.
Oncology Nursing Society Guidelines


So Why Isn't Physical Activity Being Recommended for Cancer Survivors?
True or False:
If a patient doesn't "feel well," he or she should rest and decrease activity.
Oncology Nursing Society Guidelines

National Comprehensive Cancer Network

Your Best Resource in the Fight Against Cancer®

NCCN India | NCCN Templates® | Educational Events & Programs | Subscriptions & Products | Clinical & Business Resources | NCCN Global

Share

About NCCN

Despite Evidence that It Benefits Patients with Cancer, Study Finds Most Oncologists Don't Discuss Exercise with Patients

As published in JNCCN – Journal of the National Comprehensive Cancer Network, a Gundersen Health System study found that most patients look for guidance on physical activity during cancer care, but oncologists do not feel equipped to give recommendations.

[FORT WASHINGTON, PA — May 10, 2017] It is well documented that physical activity (PA) benefits patients with cancer, both during and after treatment. Exercise helps patients combat both physical and psychological impacts of cancer treatment, giving them a sense of well-being, control, stress reduction, and empowerment. However, exactly what constitutes an appropriate PA recommendation within a multimodal cancer treatment plan is unclear.

To uncover barriers to PA recommendations in patients with cancer, researchers from Gundersen Health System in Wisconsin facilitated a focus group study. The researchers, led by Agnes Smaradottir, MD, Medical Oncologist, found that 95% of patients surveyed felt they benefited from exercise during treatment, but only three of the 20 patients recalled being instructed to exercise. Moreover, while all practitioners noted that exercise benefits patients, though not all patients, only one of the nine surveyed documented discussion of exercise in patient charts.

The study, "Are We on the Same Page? Patient and Provider Perceptions about Exercise in Cancer Care: A Focus Group Study," published in the May 2017 issue of *JNCCN – Journal of the National Comprehensive Cancer Network* is available free of charge on JNCCN.org until July 30, 2017.

Post Treatment Patient Concerns:

2300 participants:

- **Energy** - 56% did not receive care
- **Concentration** - 83% did not receive care
- **Sexual function** – 71% did not receive care
- **Neuropathy** - 60% did not receive care
- **Pain** - 37% did not receive care
- **Lymphedema** – 33% did not receive care
- **Incontinence** – 69% did not receive care
- **Lungs** – 47% did not receive care
- **Heart** – 32% did not receive care

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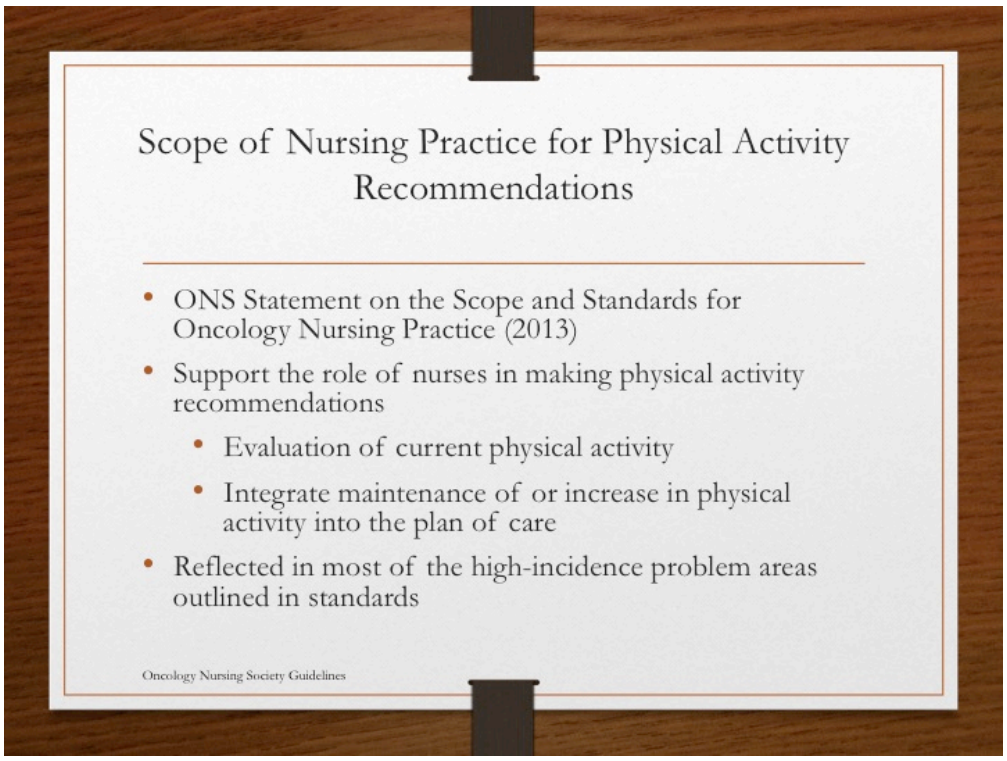
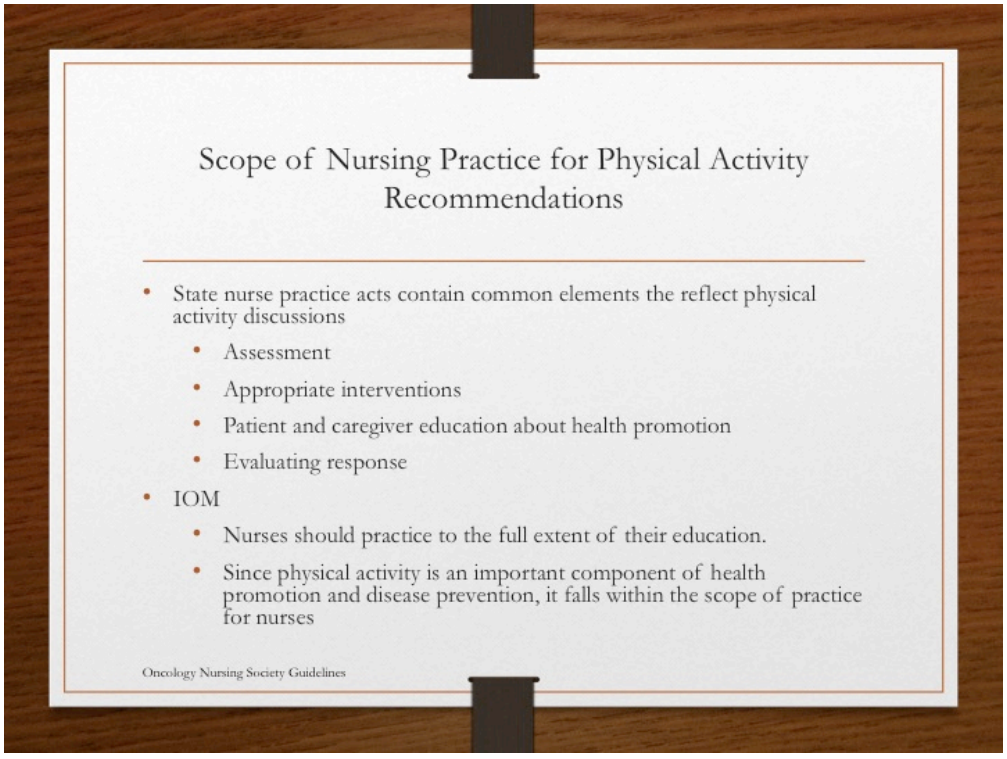
Barriers to Physical Activity in Survivors

- Symptoms (fatigue, pain, malaise etc)
- Physical limitations
- Psychosocial issues
- Failing to feel a sense of enjoyment or benefit from physical activity
- Financial limitations
- Lack of support or encouragement from family members
- Social barriers
- Cultural barriers
- Lack of education

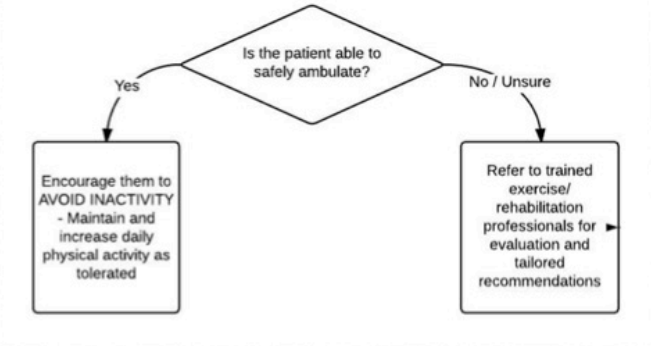
How do we Fix this Problem?

Education and Early Intervention!


Scope of Nursing Practice for Physical Activity Recommendations
ONS Statement on the Scope and Standards for Oncology Nursing Practice (2013)
Support the role of nurses in making physical activity recommendations
Evaluation of current physical activity
Integrate maintenance of or increase in physical activity into the plan of care
Reflected in most of the high-incidence problem areas outlined in standards
Oncology Nursing Society Guidelines


Scope of Nursing Practice for Physical Activity Recommendations
State nurse practice acts contain common elements the reflect physical activity discussions
Assessment
Appropriate interventions
Patient and caregiver education about health promotion
Evaluating response
IOM
Nurses should practice to the full extent of their education.
Since physical activity is an important component of health promotion and disease prevention, it falls within the scope of practice for nurses
Oncology Nursing Society Guidelines

When do bring it up



Oncology Nursing Society Guidelines

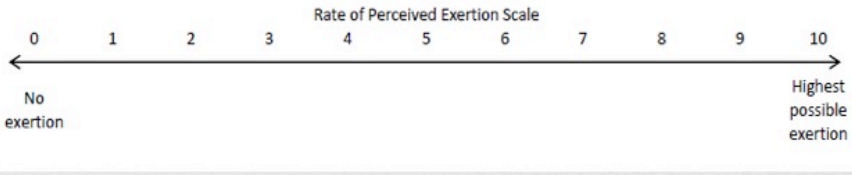
General Population Exercise Recommendations

- At least 150 minutes each week of moderate-intensity or 75 minutes of vigorous-intensity activity.
- At least two sessions per week of resistance training of major muscle groups, including stretching.

Oncology Nursing Society Guidelines

Grading Physical Activity

- Criteria to self monitor intensity of exercise
  - Breathing pattern
  - Rate of Perceived Exertion (RPE) scale



Oncology Nursing Society Guidelines

Types of Physical Activity by Intensity

Type of Physical Activity	Examples
Light • No change in breathing pattern • RPE = 1-about 3	Slow walking or bike riding, light housework or gardening, bowling, very easy resistance training, stretching, gentle or chair yoga
Moderate • Slight increase in breathing, can still talk easily • RPE = 3 to about 5	Brisk walking, bike riding more rapidly or on hills, ball sports, water aerobics, standard yoga, general gardening, ballroom dancing, resistance training
Vigorous • Can say some words, but hard to talk • RPE = around 5 to about 7	Running or jogging, biking > 10 mi/ hr, aerobic dancing, hiking, running ball sports, stair climbing, more intense resistance training

Oncology Nursing Society Guidelines

Degree of Risk for Physical Activity-Induced Events

Risk Level	Risk Factors
Low risk	• Early-stage breast cancer survivors • High baseline level of physical activity • No significant co-morbidities
Moderate risk	• Multiple myeloma lytic lesions • Bone metastases • Osteoporosis/ osteopenia • Arthritis • Musculoskeletal issues • Peripheral neuropathy • Lymphedema
High risk	• History of lung or major abdominal surgery • Ostomy • Cardiopulmonary comorbidities • Ataxia • Severe nutritional deficiencies • Morbid obesity • Extreme fatigue not proportional to recent activity

Conclusion

- Exercise benefits most patients with cancer
- At least 150 minutes each week of moderate-intensity or 75 minutes of vigorous-intensity activity.
- At least two sessions per week of resistance training of major muscle groups, including stretching.
- Physical activity discussions clearly fall within all nurses' scopes of practice.

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Appendix D: Activity and Education Assessment Tool

1. What percentage of cancer patients experience fatigue during the course of their treatment?
a. 0-20
b. 20-40
c. 40-60
d. 80-100

2. What are some of the positive benefits of physical activity during cancer treatment?
a. Reduces fatigue
b. Increases quality of life
c. May prevent cancer recurrence
d. Reduces stress
e. All of the above

3. According to the American Cancer Society (ACS) guidelines, how often should patients with cancer exercise during treatment?
a. None, they need rest
b. Weight training at least 4 times per week
c. At least 150 minutes of moderate intensity per week
d. 7 days a week

4. When is it safe for patients diagnosed with cancer to exercise?
a. Never during acute treatment
b. Right after acute treatment has ended
c. Both during and after treatment
d. None of the above

5. Based upon the Oncology Nursing Society physical activity risk stratification, which of the following are high-risk patients who should be medically cleared and supervised during exercise? (Select all that apply.)
a. Severe nutritional deficiencies
b. Ataxia
c. Lymphedema
d. Cardiopulmonary co-morbidities

6. What is considered to be moderate exercise?
a. Slight increase in breathing, can still easily talk
b. No change in breathing pattern
c. Can speak some words but difficult to talk
d. Difficulty breathing

7. What are examples of moderate exercise?
a. Slow bike riding, bowling, slow walking
b. Gentle yoga, stretching, light gardening
c. Standard yoga, general gardening, brisk walking, ball sports (softball, tennis)
d. Dancing, hiking, running

8. Based upon the Oncology Nursing Society's physical activity risk stratification, which of the following are moderate-risk patients who should be medically cleared before and supervised during exercise? (Select all that apply.)
a. Lymphedema and peripheral neuropathy
b. Early stage breast cancer
c. Osteoporosis and bone metastases
d. Morbid obesity

9. Which of the following organizations recommend physical activity for cancer survivors in both active treatment and during the survivorship phase of cancer care?
a. American Cancer Society
b. American College of Sports Medicine
c. U.S. Department of Health and Human Services
d. A and C only
e. All of the above

10. What does a score of 10 on the Rate of Perceived Exertion (RPE) scale indicate?
a. The patient experienced no exertion at all
b. The patient experienced the highest possible exertion
c. The patient experienced a moderate level of exertion
d. The patient experienced a light amount of exertion

Appendix E: Project Summative Evaluation

ONS Recommendations for Physical Activity in Patients Diagnosed with Cancer
Roberta Anderson, MSN-RN

Presenter Rating	**Strongly Agree (4)**	**Agree (3)**	**Disagree (2)**	**Strongly Disagree (1)**
The presenter met the objectives.				
The presenter covered the material in a way that was clear, understandable and meaningful.				
The format was instructive and engaging.				
There was enough time to cover the topics.				
Educational Activity Rating	**Excellent (4)**	**Good (3)**	**Fair (2)**	**Poor (1)**
Organization of the program				
Content of the program				
Quality of the program				
Conference Room/Learning Environment				
Handouts/Resources				
Overall Program Satisfaction				
Personal Impact	**Excellent (4)**	**Good (3)**	**Fair (2)**	**Poor (1)**
Physical Activity is an important part of health promotion.				
I feel adequately prepared to provide education regarding physical activity to my patient.				
I will use the information obtained from this training in practice.				

Comments:

Appendix F: Poster Presentation

Educating Oncology Nurses on the Benefits of Patient Exercise During and After Cancer Treatment

Roberta Anderson, MSN, RN-BC

Purpose:
Up until the last decade, the clinical recommendation for oncology patients was to avoid activity and get as much rest as possible. Emerging research has challenged this recommendation and now the evidence suggests patients should be as active as they can tolerate.

No formalized education about the benefits of exercise for patients undergoing radiation cancer treatment is available at Johns Hopkins for nurses. The focus of this quality improvement project was to address the educational gap in nursing practice by implementing an educational program to nurses.

Practice Focused Question:
In the oncology outpatient setting does formal education regarding the benefits of exercise to patients during and after cancer treatments (as recommended Oncology Nursing Society's "Get Up, Get Moving" campaign) positively impact oncology nurses' knowledge as evidenced by an increase in knowledge measured post-education?

PICO Statement:
Problem: There was no formalized education about the benefits of exercise provided at the by nurses to patients receiving radiation treatment for cancer.
Study population: Radiation Oncology RNs
Intervention: Education
Comparison: None Available
Outcomes: There was a statistically significant improvement in knowledge from pre-intervention (M = 6.86, SD = 1.027) to post-intervention (M = 8.36, SD = 1.447), t (13) = 4.007, p < 0.05 (two-tailed).

Physical activity is linked to positive effects on physical functioning, psychological outcomes, and body composition (Fong et al., 2012). Physical activity promotes good health and reduces the risk for disease. According to the Centers for Disease Control and Prevention (CDC), regular physical exercise helps reduce the risk of cardiovascular disease and diabetes Type II, can reduce cancer risk, improves mental health, and helps people live longer (CDC, 2015). Physical inactivity can lead to health problems and increase individual risk for certain cancers. A stronger survival link was noted in patients who exercised (Haydon, MacInnis, English, & Giles, 2006).

Results:
Pre- and Post-Education Assessment Scores

	Pre-Test (Correct)	Post-Test (Correct)	Change in score
Respondent 1	6	9	+3
Respondent 2	6	8	+2
Respondent 3	6	9	+3
Respondent 4	7	9	+2
Respondent 5	6	9	+3
Respondent 6	8	9	+1
Respondent 7	8	9	+1
Respondent 8	8	10	+2
Respondent 9	5	7	+2
Respondent 10	8	9	+1
Respondent 11	8	8	0
Respondent 12	6	5	-1
Respondent 13	7	10	+3
Respondent 14	7	6	-1
Mean	6.86	8.36	
Standard deviation	1.03	1.45	
T-Test	4.007	p < 0.05	

Limitations:
- The population of participants was small (N=14).
- Another limitation was the need to create the assessment tool as none was available.
- While the impact of education upon nurses was a focus of the project, it did not examine the impact upon patients.
- While the education intervention appears to have improved nursing knowledge, no conclusions can be made about the potential benefits to patients.

Recommendations for Future Directions:
- Sample size should be larger in subsequent studies.
- Analyze the impact upon patients.

Results: *Individual Question Performance*

	Times Correct (Pre)	Times Correct (Post)	Change
Question 1	11	10	-1
Question 2	14	14	0
Question 3	9	14	+5
Question 4	14	14	0
Question 5	1	9	+8
Question 6	12	11	-1
Question 7	11	11	0
Question 8	3	6	+3
Question 9	10	14	+4
Question 10	11	14	+3

Implications:
- A paired-samples t-test was conducted to evaluate the impact of the educational intervention on nursing knowledge.
- There was a statistically significant improvement in nursing knowledge from pre-intervention (M = 6.86, SD = 1.027) to post-intervention (M = 8.36, SD = 1.447), t (13) = 4.007, p < 0.05 (two-tailed).
- The mean increase in scores was 1.5 with a 95% confidence interval ranging from 0.69 to 2.31. The Cohen's d (1.26) indicates a large effect size.
- Education to nurses in radiation oncology regarding the benefit of exercise to patients undergoing cancer treatment leads to an increase in their knowledge on the topic.
- Results from the project support the hypothesis that the educational intervention is effective.
- Patients desire education and recommendations that promote their health and well-being.

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