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Cancer Survivors' Physical Activity Advice: A Guide For Assessment and Implementation for Nurses and Healthcare Workers

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CANCER SURVIVORS' PHYSICAL ACTIVITY ADVICE: A GUIDE FOR ASSESSMENT AND IMPLEMENATION FOR NURSES AND OTHER HEALTHCARE PROVIDERS

by

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ABSTRACT

Background: Physical activity (PA) improves cancer-related symptoms (e.g., fatigue, sleep) in cancer survivors, although there is low adherence due to barriers. Cancer survivors are interested in participating in PA but nurses and healthcare providers feel they have inadequate knowledge of PA and lack guidance to provide PA support.

Purpose: Examine PA advice for cancer survivors and healthcare providers from cancer survivor interviews to understand cancer survivors' PA and create an algorithm to help healthcare providers assess and provide PA advice to cancer survivors.

Method: Qualitative content analysis of twenty interviews with cancer survivors regarding PA.

Results: Cancer survivors advised health care providers to make PA a routine standard assessment, educate survivors on PA benefits, and provide motivation, support, and resources. Cancer survivors advice for cancer survivors was to stay positive and patient, obtain social support, and create a feasible PA plan.

Discussion: An algorithm was created for healthcare providers to assess PA and guide providers in promoting PA with cancer survivors.

DEDICATIONS

This thesis is dedicated to all those who have loved and supported me through my academic, personal, and spiritual growth. I am forever indebted to my friends, family, and God for believing in me and encouraging me along the way.

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INTRODUCTION

In the United States, the American Cancer Society (ACS) estimated 1.9 million new cancer diagnoses in 2021 (ACS, 2021). Cancer survivors—defined as any person who has been diagnosed with cancer through the remainder of their life, accounted for an estimated 16.9 million individuals in 2019 and continues to grow in number (ACS, 2019). As a result of cancer and treatment, cancer survivors cope with many physiological (e.g., fatigue, nausea, pain, vomiting, sleep disturbances; Devlin, Denson, & Witford, 2017; Gegechkori, Haines, & Lin, 2017; Pearce et al., 2017) and psychological (e.g., anxiety, depression, poor body image; Devlin, Denson, & Witford, 2017; Gegechkori, Haines, & Lin, 2017) symptoms.

Physical activity (PA) participation is beneficial for cancer survivors in decreasing cancer symptoms (van Vulpen et al., 2016; Campbell et al., 2019; Johnsson et al., 2019). In recent studies, aerobic and resistance exercise decreased nausea (Johnsson et al., 2019), sleep disturbances, pain, depression, and increased self-esteem (Ferioli et al., 2018). In a roundtable discussion by the American College of Sports Medicine (ACSM), aerobic and resistance training in combination decreased fatigue, reduced anxiety, and improved perceived physical function and quality of life (QoL) in cancer survivors (Campbell et al., 2019). Through this comprehensive review of the evidence, the ACSM concluded that PA was generally safe, and that every cancer survivor should "avoid inactivity" (Campbell et al., 2019).

While cancer survivors should aim to achieve 150-300 minutes of moderate intensity or 75-150 minutes of vigorous intensity (or an equivalent combination of the two intensities of aerobic physical activity) spread over most days of the week and two days of strength training, different phases of the cancer survivor's journey may require adjustments to these

recommendations (Rock et al., 2022). Exercise training guidelines for cancer survivors recommend at least 30 minutes of moderate-intensity aerobic training twice a week for at least 8 to 12 weeks (Campbell et al., 2019). In addition, resistance training is recommended at least twice a week with at least two sets of 8 to 15 repetitions (Campbell et al., 2019). Special considerations are given to specific cancer survivors (e.g., older adults, bone loss/bone metastases, ostomy requirement; Campbell, 2019).

Although physical activity improves cancer symptoms, there is low adherence to recommended PA (Blaney et al., 2013; Fernandez et al., 2015), because of barriers. Cancer survivors reported cancer-related symptoms (e.g., fatigue, pain) and psychosocial constraints (e.g., lack of motivation, lack of facilities, low support) as the main barriers to PA participation (Blaney et al., 2013; Fernandez et al., 2015; Sheill et al., 2018; Elshahat, Treanor & Donnelly, 2021).

On the contrary, facilitators of PA included social support/guidance by healthcare providers, recognized health benefits, and symptom management techniques/tools (Elshahat, Treanor & Donnelly, 2021). Nevertheless, many cancer survivors felt that they were not given adequate education on managing these symptoms (e.g., fatigue, pain, nausea) that could be improved with PA (Blaney et. al., 2013; Fernandez et al., 2015), and PA resources were less common than other supportive services (Karvinen, Carr, & Stevinson, 2013).

When asked about PA, cancer survivors' responses indicated that 83.3% of oncologists and 86.7% of nurses did not educate on the importance of PA during treatment (Fernandez et al., 2015). Additionally, cancer survivors stated that general information about PA was not provided during their treatment (Fernandez et al., 2015; Fisher et al., 2015). Hardcastle and colleagues

(2017) found that although cancer survivors reported receiving general advice to lose weight and exercise, they did not receive clear and specific advice on PA, and many were unaware of any PA guidelines. Physical therapists are well-equipped to teach cancer survivors about PA and to create individualized plans, but they are rarely utilized in cancer treatment (Silver, 2017).

Since patients with cancer are often in the care of nurses throughout their treatment trajectory, nurses form relationships with their patients and develop a greater understanding of each patient's circumstances and diagnosis (Roberts et. al., 2019). Consequently, nurses felt they were in a position to provide PA information and support with patients (Roberts et a., 2019). Thus, nurses are essential in advocating for PA given their knowledge of the patient's treatment and limitations.

Despite being in a position to inform patients about PA, many nurses and healthcare providers felt they had insufficient knowledge to provide advice on PA (Adams et al., 2021; Karvinen, Carr, & Stevinson, 2013; van Veen et al., 2017). In a cross-sectional study, 46% of oncology nurses perceived themselves as lacking knowledge to provide adequate PA advice (van Veen et al., 2017). Nurses reported that their PA advice was to promote PA in accordance with generic guidelines, participate in 30 minutes of non-specific PA daily, visit a physical therapist, and attend their local cancer rehabilitation program (van Veen et al., 2017).

After completing an education workshop, healthcare providers and nurses reported higher confidence in providing information and advice regarding benefits of PA, assessing patient willingness to participate in PA, and providing PA advice that accommodated patient individuals needs and limitations (O'Brien et al., 2016). Consequently, healthcare workers reported they would support more physical activity regularly with their patients (O'Brien et al., 2016).

Therefore, providing feasible and adequate PA knowledge to healthcare workers is a necessity to increase cancer survivor participation in PA.

When asked about cancer survivors' response to PA advice, nurses reported that cancer survivors were generally receptive to guidance and support about PA and were most interested in receiving PA guidance shortly after diagnosis or during treatment, but that patients were less likely to independently request this guidance or suggest referrals (Karvinen, Bruner, & Truant, 2015). Additionally, cancer survivors were interested in learning about PA, felt able to participate in PA, and were willing to join an exercise program (Blaney et al., 2013; Wong McAuley, & Trinh, 2018). Thus, research has shown cancer survivors desire to engage in PA during their cancer treatment but need guidance from knowledgeable nurses and other healthcare providers.

In spite of PA being a healthy behavior that reduces many cancer symptoms, healthcare providers do not fully understand how best to promote PA among cancer survivors. Accordingly, there is a clear need to equip nurses and other healthcare providers with the resources and knowledge to effectively educate and support cancer survivors in PA participation.

Problem

The problem is that, while PA is beneficial to the health and well-being of cancer survivors, it is not known how healthcare providers can best promote PA among cancer survivors undergoing outpatient treatment. Specifically, healthcare providers lack tools and knowledge based on the patient perspective to routinely assess and promote PA among cancer survivors.

Purpose

In this study, we aim to examine PA advice for cancer survivors and healthcare providers from cancer survivor interviews to understand cancer survivors' PA. Given our findings, we aim to create a PA algorithm to help healthcare providers assess and provide PA advice to cancer survivors.

METHOD

Design

A qualitative design was used to examine de-identified transcripts of cancer survivors who participated in a study to understand PA advice for other cancer survivors and healthcare workers.

Sample

The study sample included twenty cancer survivors who were undergoing outpatient infusion treatment at a large, urban healthcare system's cancer center in the Southeastern US between June 2020 and January 2021. Participants in the parent study included male and female adults who spoke English, were over the age of 18, and had a cancer diagnosis with outpatient infusion treatment at the cancer center. Non-English-speaking patients and those who used assistive devices (e.g., cane, walker, wheelchairs, etc.) were excluded from the study.

Human Subjects Review

The main study proposal was submitted to the university and clinical site IRBs. The study was deemed not human subject research by the IRBs. Analysis of the de-identified transcript data for this analysis during the author's thesis was also deemed not human subjects research by the university IRB prior to transcript analysis.

Procedures

For the parent study, eligibility screening for potential participants was completed by nursing staff or physician at the outpatient treatment center who provided contact information for the research team. Eligible patients interested in participating in the study contacted the PI and were sent the Explanation of Research document through email. If the patient was interested in

learning more about the study, the study was explained, and all questions were answered. If the patient was then interested in study participation, the PI scheduled a date and time for the interview.

Data Collection

Interviews occurred by phone and lasted an average of 35 minutes. Before the interview, the PI again reviewed the study purpose, answered questions, and obtained verbal consent from participants. After confirmation that the participant was in a private, comfortable place, the PI asked close-ended questions regarding the type of cancer, history of cancer, and current treatment. Subsequently, the PI asked open-ended questions, based on a semi-structured interview guide, about PA participation and motivation, facilitators and barriers of PA, advice they had for other cancer survivors about PA, and advice they had for healthcare providers about PA. Interviews were digitally recorded and transcribed verbatim by a professional transcription service and de-identified for analysis. Concluding the interview, participants were thanked for their time and given a $25.00 electronic gift card to an online shopping website.

Data Analysis

Data analysis was conducted using methods developed by Strauss and Corbin including constant comparison and content analysis (1990). Transcribed interviews were reviewed by the PI. After the first interview, the constant comparative method of analysis was used. A codebook was created by the research team to ensure consistent coding of the data. Each coder read the first three transcripts to identify corresponding codes to passages. Then, coders met to review codes assigned to the transcripts, and agreed on any incongruent codes. After agreement on passages and respective codes, the codebook was updated and used to code the remaining

transcripts. Two members of the research team coded each subsequent transcript for reliability/trustworthiness. These codes were then reviewed with a qualitative expert to ensure the research team was capturing the core of information from the interviews. After, the team met and came to a final agreement on the codes, and the categories and themes were discussed. After completion of coding and creation of the codebook, an algorithm was created for nurses and healthcare workers based on the PA advice from the interviews with cancer survivors. This algorithm included a printed hand-out sheet for nurses and healthcare workers to assess cancer survivors' PA and provide PA advice to their patients, which included PA preference and barriers/facilitators of PA.

RESULTS

Demographics

In the study, twenty participants (30% males) completed phone interviews. Participant cancer diagnoses included breast (45%), head and neck/throat (10%), small intestine (10%), rectal (5%), chronic lymphocytic leukemia (5%), non-Hodgkin lymphoma (5%), ovarian (5%), uterine (5%), kidney (5%), and multiple myeloma (5%). For 80%, this was their first cancer diagnosis, while others had previous episodes of cancer with treatment types including surgery lumpectomy through debulking surgeries, chemotherapy, immunotherapy, or radiation. Self-reported demographic information can be found in Table 1.

Table 1.

Self-reported Participant Characteristics.

Characteristic	n (%)
Gender identity	
Male	6 (30%)
Female	14 (70%)
Cancer history	
First cancer diagnosis	16 (80%)
Other prior cancer diagnosis	1 (5%)
Recurrence/ exacerbation of cancer	3 (15%)
Cancer type	
Breast	9 (45%)
Head and neck/throat cancer	2 (10%)
Small intestine	2 (10%)
Rectal	1 (5%)
Chronic Lymphocytic Leukemia	1 (5%)
Non-Hodgkin Lymphoma	1 (5%)
Ovarian	1 (5%)
Uterine	1 (5%)
Kidney	1 (5%)
Multiple myeloma	1 (5%)
Outpatient treatment type	
Chemotherapy	16 (80%)

The Story

In the advice to other cancer survivors, there were three main themes that appeared. The theme of *staying positive and patient* emphasized the importance of perspective and self-compassion when participating in PA as a cancer survivor. The theme of *social support* captured the different types of social support cancer survivors experience, and their value of participation in PA with others. The theme of *creating a feasible plan* reflected finding enjoyable and achievable PA options, and to fit in PA whenever possible.

In the advice to healthcare providers, there were also three main themes identified. The theme of *assess PA* showed that cancer survivors felt they had not been assessed adequately about PA in healthcare, and that routinely assessing PA would impact their engagement in PA throughout their treatment. The theme of *educate on PA benefits* revealed that many participants were not aware of the benefits of PA to decrease cancer symptoms, and learning about the benefits of PA would increase their participation in PA. The theme of *provide support, motivation, and resources on PA* emphasized specific interventions for PA cancer survivor support and inspiration/motivation from healthcare providers, as well as resources that may aid cancer survivors in their participation in PA.

Advice to other cancer survivors

Staying positive and patient

The main theme from participants included staying positive and remaining patient. Many participants conveyed that participation in PA improved their physical and psychological health. Many mentioned that there will be days that are more difficult than others in terms of fatigue,

and to realize that energy levels will fluctuate. Many participants conveyed the importance of listening to your body and adjusting physical activity based on current activity tolerance.

Taking one day at a time and planning for difficult days was imperative to cancer survivors, and although they may feel low energy due to their cancer and/or treatment, they felt it was important for themselves to engage in PA to counteract the fatigue. When cancer survivors felt too tired to participate in PA, other cancer survivors wanted them to realize that engaging in PA will actually improve their cancer-related fatigue.

Social support

Another theme in advice to other cancer survivors was to find a person who will engage in PA with them. Given that many felt not having someone to exercise with was a barrier to PA, support from others not only brought encouragement, but accountability to those struggling with participation in PA. They mentioned the social support could come from family members, friends, pets, religious organizations, and other cancer survivors who were farther along in their treatment journey.

Create a feasible plan

The last theme centered around planning PA and taking every chance to participate in PA. Participants encouraged other cancer survivors to fit in PA whenever possible, such as walking the halls when hospitalized, exercising in bed or a recliner, finishing a house project over days rather than all at once, and seeing a physical therapist if offered. Participants emphasized the importance of making a schedule and potentially preparing for PA the night before.

Many stressed that even if it's a minor routine at home, engaging in PA was beneficial for their health. One participant even mentioned spreading chores throughout the week at home for PA. Lastly, they advised to participate in PA that is enjoyable at an appropriate time, such as when the weather is ideal.

Advice for Healthcare Providers

Assess PA

Participants felt their provider assessing for PA (e.g., asking about baseline and current activity level, favorite type of activity, etc.) is important for their participation in PA. Many expressed that although they were frequently assessed for cancer-related symptoms (e.g., diarrhea, constipation, fatigue), they were not assessed for PA when they went for treatments or to see their healthcare providers. They felt that asking about their PA would push them to think about what types of PA they used to do or enjoy doing, which could be a satisfactory starting point for intervention.

Educate on PA Benefits

Participants felt that healthcare providers should educate them on the benefits of PA participation (e.g., decreases fatigue, improves sleep, improves mood, etc.), as many were unaware of the benefits of PA on their cancer-related symptoms and were not given this information at visits to their healthcare providers. Furthermore, some felt it may be beneficial to be reminded of medication side effects (e.g., dehydration) in their relation to PA (e.g., staying hydrated).

Provide Support, Motivation, and Resources on PA

Participants were interested in receiving PA support, motivation, and resources from nurses and other healthcare providers. Participants brought up the use of motivational videos, telehealth PA groups, reminders by email/text, and encouragement during healthcare visits. Furthermore, they felt that nurses could aid in providing outside resources for PA, such as helpful phone apps, gym access, activity trackers, and referrals to other healthcare providers (e.g., physical therapist, psychologist). Lastly, given the potential limitations resulting from cancer and/or treatment, participants felt they needed guidance on participating in safe PA, and could benefit from a PA plan from healthcare providers. Key quotes from participants regarding PA advice to cancer survivors and healthcare providers are noted in Table 2. Additionally, PA guidelines for cancer survivors and resources are available in Figure 1.

Table 2.

Key quotes from cancer survivors regarding PA advice to cancer survivors and healthcare providers

Advice to Cancer Survivors	Stay Positive and Patient	“Havin’ a real bad day today doesn’t mean you can’t do it tomorrow.”
		“I don’t think a lot of people realize that the energy gets energy, that by trying to stay active, it keeps trying to force the energy level up.”
	Social Support	I think maybe if someone was saying, "Hey, I've only been doing this for a couple months, but I'd feel much better, wanna come walk with me?"" "Just simple steps maybe and if it makes them feel better, they're—I think they would be encouraged to do it more."
		But if they had somebody to do it, they-they—I think that would en-encourage them, more accountability to do it instead of just sitting and feeling bad,"
	Feasible	Take interest in things that you can do, um, and create projects that have always been there but now you can focus on ’em.
		“Well, something I didn’t do, and that-it was early on, worked out a routine I could do at home to stay active, and I wish I had done that before now.”
Advice to Healthcare Providers	Assess PA	“it just seems like one thing is lacking and that is, I think, the nutrition and exercise question: How are you doing with your activity level?...they don't ask that. And I think if they were asked that as many times as they were asked about the diarrhea and constipation, it might kinda come to their forefront that maybe that's an important thing to do."
	Educate on PA Benefits	"you get a lot of wellness information just about health overall, but I don't know that I've ever seen anything specific about why it's good for you to be physically, um, exercising for cancer."
		“if I knew, you know, if you walk this many times a week, here's how it helps your body specifically, like, that would help me.”
	Provide Support, Motivation and Resources	“I still believe if somebody had been here, you know, givin’ me therapy and motivating me and pushing me, I probably would’ve done more.”
		“ Physical therapists are, in a way, personal trainers, you know, so professional advice and, like, actually one-on-one, the ability to be with someone one-on-one to show me the right way to do it, it would definitely help and encourage me and probably hold me accountable a little bit better.”

Figure 1.

Cancer Survivor Physical Activity Guidelines and Resources for Nurses

American Cancer Society
- https://www.cancer.org/treatment/survivorship-during-and-after-treatment/be-healthy-after-treatment/physical-activity-and-the-cancer-patient.html
- https://www.cancer.org/latest-news/best-types-of-exercise-for-older-adults.html

American College of Sports Medicine
- https://www.acsm.org/blog-detail/acsm-certified-blog/2019/11/25/acsm-guidelines-exercise-cancer-download

Center for Disease Control and Prevention
- https://www.cdc.gov/cancer/survivors/healthy-living-guides/physical-health/physical-activity.htm

National Council on Aging
- https://www.ncoa.org/article/exercise-programs-that-promote-senior-fitness

Massachusetts General Hospital Cancer-Lifestyle Medicine Program
- https://www.youtube.com/watch?v=xtKvHBGx0VM
- https://www.youtube.com/watch?v=Mz7xTMTUIpU
- https://www.youtube.com/watch?v=sF0berGrlho

DISCUSSION

In this study, we aimed to examine PA advice for cancer survivors and healthcare providers to understand how to promote cancer survivors' PA. Cancer survivors conveyed their experience with participation in PA, and ways in which healthcare providers can better assist them in PA. Cancer survivors shared that if they were giving another cancer survivor advice in the beginning of their journey, they would advise to remain positive and patient, find or maintain social support, and develop a feasible PA plan. Cancer survivors advised healthcare workers to make PA a standardized part of their routine assessment, educate patients on the benefits of PA, and provide PA resources and motivation.

In this study, cancer survivors emphasized the importance of having a positive attitude when engaging in PA, even when they did not feel the energy to do so. Other studies support these beliefs. Frikkel and colleagues (2020) have shown that motivation for PA (e.g., believing PA could have a positive impact on their QoL) predicted PA engagement and patients who stated they were motivated for PA were 5.6 times more likely to engage in PA at least once a week. Additionally, cancer survivors felt benefits of positive mental health, feelings of self-gratification, and decrease in cancer-related side effects (e.g., fatigue, pain, etc.) from their engagement in PA (Liska & Kolen, 2020). Our findings support that although the presence of cancer symptoms were a constraint in PA participation, remaining positive and motivated increased our participants engagement in PA to counteract their cancer-related symptoms.

Consistent with previous research (McDonough et al., 2021), participants in this study felt that social support (e.g., family, friends, other cancer survivors, etc.) was beneficial in their PA participation, and that not having social support deterred them from engaging in PA.

Participating in PA with other survivors provides accountability in effort, companionship, and made PA fun as opposed to engaging in PA alone (McDonough et al., 2021).

Participants in our study mentioned the importance of creating a feasible PA plan, and participating in PA whenever possible (e.g., raising legs in a recliner, walking the hospital halls, completing chores at home, etc.). This strategy is in accordance with health behavior research, which includes setting feasible short-term goals as a strategy to increase PA participation (Rogers et al., 2018). Although high-intensity PA has shown greater improvements in cancer-related symptoms in comparison to low-intensity PA, low-intensity PA (e.g., walking, cycling, resistance training, flexibility programs, etc.) does not generally require a comprehensive assessment of physical fitness for medical clearance in cancer survivors (Campbell, 2019), and there is evidence to support low-intensity PA when cancer-related symptoms are severe (Hayes et al., 2019).

Cancer survivors in this study reported that their healthcare providers did not regularly assess PA during their treatment visits or educate on the benefits of PA for reduction of cancer-related symptoms, and thought that regular assessment and education would be beneficial to their participation in PA. There is research to suggest that there is a direct relationship between health knowledge and participation in physical activity (Fredriksson et al., 2018). Although, cancer survivors that recalled receiving PA advice from their healthcare provider were more likely to currently engage in PA and meet PA guidelines (Fisher et al., 2015), many cancer survivors cannot recall receiving PA guidelines or advice (Hardcastle et al., 2018). Furthermore, research suggests providing PA support and education to survivors during the ‘teachable moment’ in their journey is effective, and that there is a significant lack of knowledge surrounding PA in cancer

survivors (Clifford et al., 2018). Thus, there is a clear need for nurses and other healthcare providers to routinely assess PA and educate cancer survivors on PA benefits.

In our study, participants reported they lacked guidance from healthcare providers about specific, attainable PA participation and programs, and would benefit from receiving these recommendations. Research suggests cancer survivors benefit from healthcare providers actively recommending specific programs and PA participation as opposed to general recommendations to stay active (McDonough et al., 2021). Furthermore, PA encouragement through proactive and positive comments motivated cancer survivors to participate in PA and challenge themselves physically and mentally (McDonough et al., 2021), and prompts or cues to perform PA (e.g., telephone calls, pedometers) increased PA engagement (Finne et al., 2018).

Limitations

The physical activity possibilities and experiences of this purposive convenience sample of 20 cancer survivors receiving outpatient treatment at an urban cancer center in Central Florida may not be typical. Furthermore, participants did not encompass all types of cancer survivors, as a majority of our participants were female, and diagnosed with breast cancer. Additionally, the prior collection of interview data limited the study since follow-up questions could not be asked.

Implications for Practice

Nurses need to assess PA in cancer survivors by asking about their current PA (e.g., type, frequency, duration), and exploring potential PA options. Furthermore, nurses should assess patient symptoms and symptom management. Nurses should promote regular PA and educate patients on the benefits of PA in regard to individual symptoms and needs. Nurses need to provide clear and specific advice on PA to cancer survivors. Providing resources on PA (e.g.,

programs/groups, activity trackers, apps) and motivation (e.g., text messages, reminders) is important for healthcare providers to meet cancer survivors' PA needs.

An evidence-based algorithm is included in Appendix A to do so and resource links are provided in Figure 1. The evidence-based algorithm and links may be used to guide nurses in assessing PA, educating patients on benefits of PA, and providing resources if needed. This algorithm should be used at every patient visit to standardize PA assessment and the patients' dynamic PA needs pre-treatment, during treatment, and post-treatment. The algorithm starts with the nurse asking the patient if they participate in PA, and based on the patients' responses (e.g., 'yes' or 'no'), the nurse will continue following the respective arrows for next steps in advising the patient. The algorithm approach is grounded in patient-centered care, in that the PA advice and potential interventions depend on the patients' individual satisfaction with current PA, tailored PA options, treatment side effects/cancer symptoms, barriers to PA, and desired resources/referrals.

Implications for Nursing Education

Oncology healthcare providers, including nurses, are in a position to support cancer survivors in improving cancer-related symptoms through PA engagement. Unfortunately, many oncology nurses and other healthcare providers lack the knowledge and confidence to provide PA advice to their patients (Adams et al., 2021; Karvinen, Carr, & Stevinson, 2013; van Veen et al., 2017). In addition to support, nurses need education to increase knowledge on the importance of PA for all cancer survivors. Nursing curricula and continuing education for oncology nurses should incorporate content on healthy lifestyles and behaviors for cancer survivors so nurses can provide clear, evidence-based advice to their patients to improve quality of life and outcomes.

Additionally, nurses should provide resources and referrals specific to the patient needs and region.

Implications for Research

Given that our team did not collect demographic information on race and ethnicity, it is not known how ethnically diverse cancer survivors view PA. More research is needed to fill the knowledge gap in regard to more ethnically diverse cancer survivors. Future research should include nurse-led interventions that incorporate PA for cancer survivors. Future studies should be longitudinal to examine PA adherence and long-term effects among cancer survivors. Additionally, future interventional studies need to be developed and should include advice mentioned by these participants of exercise based on abilities, peer exercise programs, activity trackers, and positive social support for PA.

CONCLUSION

This study adds a unique contribution to the knowledge base on PA participation among cancer survivors as it provides the patient perspective on PA advice for other cancer survivors and healthcare providers. Cancer survivors advise that other cancer survivors should stay positive and patient, find and maintain social support, and create a feasible PA plan. Cancer survivors advise healthcare providers to routinely assess PA, educate on PA benefits, provide resources, inspire motivation, and refer as needed (e.g., physical therapy, psychology). Our work suggests that oncology nurse education should include the components of PA assessment, benefits of PA for cancer-related symptoms, provision of clear evidence-based information, and PA plan development with cancer survivors. Additionally, oncology nurses and other healthcare providers can utilize the evidence-based algorithm provided to assess cancer survivors' PA and support PA through education, guidance and referrals tailored to individual patient needs.

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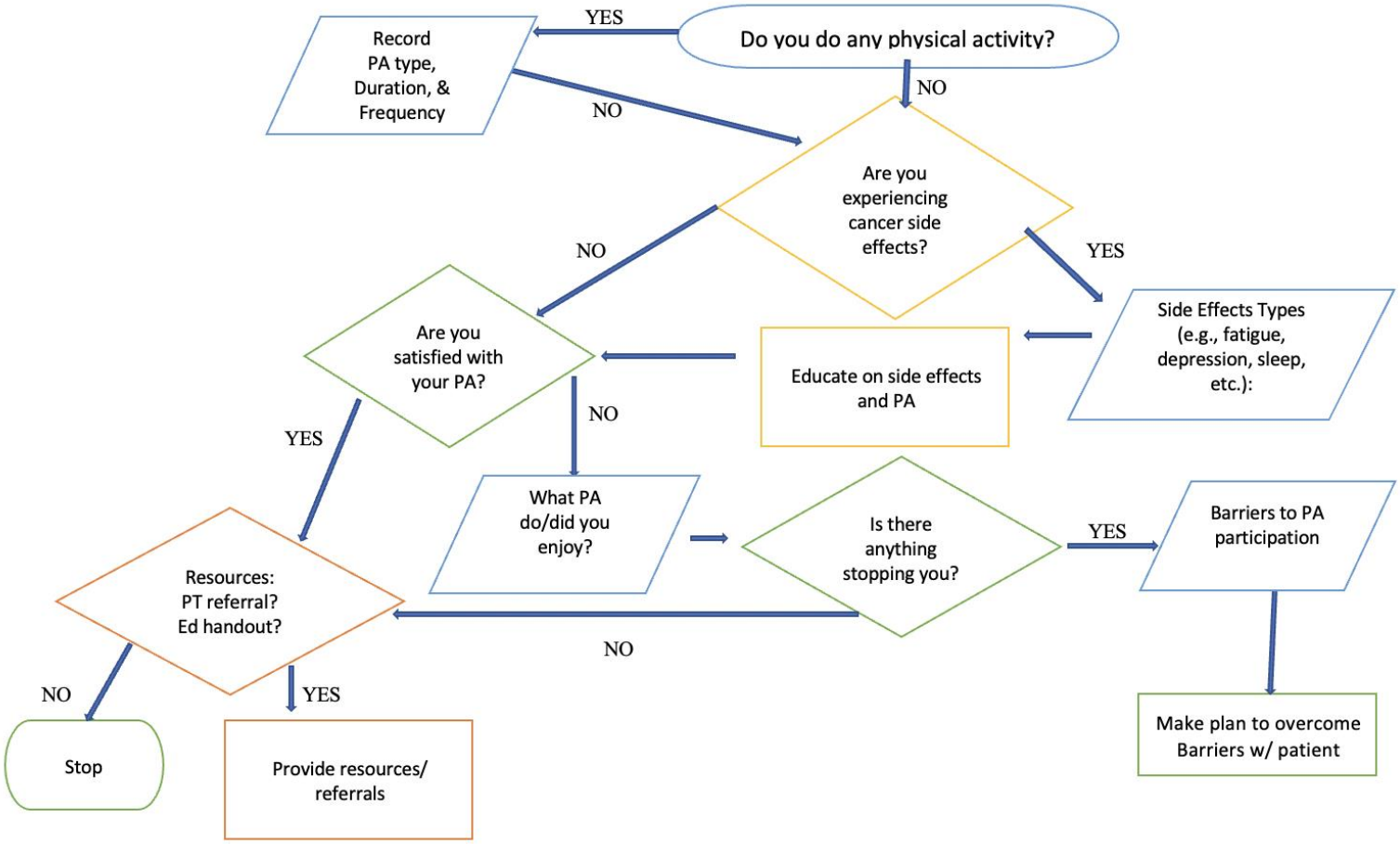
APPENDIX A: ALGORITHM



Note: Parallelogram = record patients' answers, rhombus = ask patient question, rectangles = nurse action (e.g., educate on PA benefits, make plan to overcome barriers with patient, provide resources/referrals).