

## Research Protocol

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# Characterizing Non-Curative Cancer Patients' Preferences, Barriers, and Facilitators to Engaging in Exercise Programs: A Scoping Review Protocol

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DOI: <https://doi.org/10.15273/hpj.v2i1.11157>

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### Abstract

**Objective:** The objective of this scoping review is to understand the existing knowledge on non-curative cancer patients' preferences, barriers, and facilitators to engaging in an exercise program, as well as strategies for practitioners to increase the uptake of exercise programs for non-curative cancer patients. **Introduction:** Early palliative interventions for patients with non-curative cancers have been shown to have positive effects on an individual's quality of life. A common objective of early palliative interventions is to enhance quality of life, enable symptom management, and improve mental health. Although not a specific component of early palliative care, tailored exercise programs have the similar goal of enhancing quality of life in non-curative cancer patients. **Inclusion criteria:** This review will consider sources that include non-curative cancer patients and their needs and experiences regarding participation in exercise programs. Qualitative, quantitative, mixed methods, and grey literature will be searched. **Methods:** This scoping review will be conducted in accordance with JBI methodology. Databases to be searched from their respective inception to September 9, 2021, include CINAHL, MEDLINE, Embase, Scopus, SPORTDiscus, and PsycInfo. A comprehensive search strategy was developed in accordance with JBI methodology to retrieve relevant sources. Two independent reviewers will screen titles and abstracts as well as full texts of relevant sources. The results of the search and the study inclusion process will be reported in full in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) flow

diagram. Data will be extracted by two independent reviewers and then mapped onto the Behaviour Change Wheel. The results will be presented narratively, using appropriate tables and figures. **Conclusion:** This review will map key barriers, facilitators, and preferences to partaking in exercise programs for individuals with non-curative cancer. This will aid in informing priorities for subsequent implementation studies.

## Introduction

The number of cancer survivors has steadily increased over the past several decades and is projected to increase by as much as 31% in the next 10 years (National Cancer Institute, 2020). Owing to improved treatment, the number of those living with a non-curative disease is also on the rise (Stegmann et al., 2021). Non-curative cancer entails a cancer that cannot be treated through chemotherapy or radiation, and treatments are targeted toward symptom relief. Current palliative chemotherapy for some cancer patients includes targeted immunotherapies to prolong an individual's life but will not cure them of cancer. As well, individuals who have uncontrolled pain from bone metastases should receive radiation to control pain; however, their therapy is not curative. For those individuals who bear a non-curative diagnosis, improving quality of life and symptom management (World Health Organization, 2021) becomes of particular importance. Most individuals with non-curative cancer encounter vastly different challenges compared to those who are placed on traditional treatment paths. This includes but is not limited to psychological distress, lack of social connectivity, and loss of physical function (Brown et al., 2006; Jassim et al., 2015; Oldervoll et al., 2005; Porock et al., 2000; Prue et al., 2006; Stegmann et al., 2021). In this review protocol, the term non-curative cancer will be used synonymously with palliative cancer, terminal cancer, advanced stage cancer, and metastatic cancer. A palliative approach to care entails identifying and supporting individuals early in their illness trajectory, with the objective of enhancing quality of life, enabling symptom management, and improving mental health. These are of the utmost importance when working with individuals diagnosed with non-curative cancers (World Health Organization, 2021). It is part of the overall philosophy of

palliative care to provide active holistic care for individuals across all ages with severe health-related suffering (Sawatzky et al., 2016).

Recent medical and technological advancements have extended the life of cancer patients, resulting in a greater number of individuals living longer with a non-curative diagnosis and progressive functional deterioration (Chui et al., 2009; Kamal et al., 2011; Oechsle et al., 2011). An individual's ability to engage in activities of daily living is often substantially diminished and is frequently cited as one of the most distressing concerns (Neo et al., 2017). Tailored exercise interventions early in disease trajectory have been shown to help mitigate loss of physical function, lessen fatigue and symptom burden, and foster enhanced quality of life in palliative cancer patients (Twomey et al., 2018; Uster et al., 2018). Although not a specific component of early palliative care, tailored exercise programs have the similar goal of enhancing quality of life. Utilizing gentle exercise has been shown to have a positive effect on individuals with non-curative cancer (Oh et al., 2014). However, due to both a lack of knowledge of benefits and limited access to tailored exercise programs for individuals with non-curative diagnoses, only 34% of those with advanced disease meet physical activity (PA) guidelines (Knowlton et al., 2020). Efforts are needed to clearly understand these barriers and facilitators to engaging in PA in this sub-population of cancer patients to support the implementation of effective interventions into standardized cancer care.

Regrettably, the uptake and implementation of exercise into standard practice in non-curative cancer care continues to be limited. A high proportion of non-curative cancer patients (63%) are willing to participate in a structured exercise program, and 54% of

non-curative cancer patients have successfully completed an exercise program, even though they are terminally ill (Oldervoll et al., 2005). A better understanding of the preferences, barriers, and facilitators to program uptake is important when designing interventions for this sub-population, and it is important to increase patient access to physical activity across the cancer continuum. Implementation researchers recommend using a theory-based approach to identify barriers and facilitators to uptake and then tailor interventions. Accordingly, conducting a theory-based analysis of patient preferences, barriers, and facilitators to exercise uptake in non-curative cancer patients helps to understand the relationship between these factors and the mechanisms by which they influence behaviour (Michie et al., 2014). Studies have found that the use of theory-based approaches to intervention design can lead to more successful implementation and intervention success (Craig et al., 2013). As such, adopting a systematic, theory-informed approach will help to (a) identify the preferences, barriers, and facilitators to exercise uptake in this population at multiple levels (e.g., individual, social, cultural, political) and (b) design implementation strategies to acknowledge patient preferences, overcome barriers, and enhance facilitators to exercise uptake.

Many implementation theories and frameworks exist to provide systematic guidance for designing, implementing, and evaluating interventions aimed at changing behaviour. The Behaviour Change Wheel (BCW) is a synthesis of 19 existing behaviour change frameworks that offers a comprehensive and systematic guide to intervention design (Michie et al., 2014). The BCW includes an analysis of the nature of the behaviour, the mechanisms that need to be addressed in order to create behaviour change, and the interventions and policies required to change those mechanisms (Michie et al., 2014). The BCW uses the COM-B model, which proposes that one needs Capability (C), Opportunity (O), and Motivation (M) to perform a Behaviour (-B; Michie et al., 2014). We have selected the BCW

over other implementation models, theories, and frameworks such as the Consolidated Framework for Implementation Research (CFIR; Damschroder et al., 2009) or the Promoting Action on Research Implementation in Health Services (PARIHS) framework (Rycroft-Malone, 2004) because of the BCW's core focus on mapping behavioural change barriers and facilitators to targeted, evidence-based behavioural change strategies. The BCW's behavioural analysis is an important first step in designing and implementing theory-informed interventions. To our knowledge, this type of behavioural analysis has not been conducted in the context of exercise adoption in non-curative cancer patients.

For the purposes of this review, non-curative cancer patients will encompass those individuals living with cancer and not on curative-intent treatment. That is, their anti-cancer treatment is intended to optimize symptom management, improve quality of life, and/or slow tumour progression as opposed to cure.

The objective of this scoping review is to identify, characterize, and map the existing knowledge on non-curative cancer patients' preferences, barriers, and facilitators to engaging in an exercise program. A scoping review will be conducted, as it is exploratory in nature and will aid in identifying and analyzing knowledge gaps, scope, and volume of the current literature, as well as mapping current evidence. A scoping review will also serve to inform questions for subsequent systematic reviews. A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews, and *JBI Evidence Synthesis* was conducted, and no current or underway scoping or systematic reviews on the topic were identified. Findings from this review will inform the design of behavioural interventions to support non-curative cancer patients in increasing exercise uptake.

### **Review Question**

The questions driving this review are the following:

1. What are non-curative cancer patients' preferences, barriers, and facilitators to participating in exercise programs, and how do these preferences, barriers, and facilitators map onto the COM-B?
2. What exercise interventions currently exist for non-curative cancer patients?

### **Inclusion Criteria**

#### **Participants**

This review will consider literature that includes non-curative cancer patients (incurable cancer, palliative cancer, terminal cancer, advanced cancer, and metastatic cancer) as participants. This review will exclude pediatric and adolescent patients with non-curative cancer (<18 years of age) or individuals who are considered in remission or cancer survivors. Excluding childhood cancers is due to the vast difference in experiences for pediatric and adolescent cancer patients compared to adults (Zebrack, 2008).

#### **Concept**

This review will consider literature that explores patient preferences, perceived barriers, and facilitators for non-curative cancer patients to participate in exercise programs. Exercise will be defined as planned, structured, and purposeful PA (Caspersen et al., 1985), and will include—but is not limited to—walking programs, strength training and mixed exercise programs, and any other form of purposeful PA. Preferences will be defined as “the fact of liking or wanting one thing more than another” (Cambridge University Press, n.d.-c), a facilitator will be defined as “someone [or something] who helps to make something happen, or makes it easier” (Cambridge University Press, n.d.-b), and a barrier will be defined as “something that prevents something else from happening or makes it more difficult” (Cambridge University Press, n.d.-a).

#### **Context**

This review will consider studies located in all care settings, including hospital, community, primary care, and ambulatory care settings. This review will exclude studies that are based in long-term care or hospice settings,

as the focus is on a population that has >6 months to live. Studies will not have a geographical limit.

#### **Types of Sources**

This scoping review will consider both experimental and quasi-experimental study designs including randomized controlled trials, non-randomized controlled trials, pre-post studies, and interrupted time-series studies. In addition, analytical observational studies including prospective and retrospective cohort studies, case-control studies, and analytical cross-sectional studies will be considered for inclusion. This review will also consider descriptive observational study designs including case series, individual case reports, and descriptive cross-sectional studies for inclusion.

Qualitative studies that focus on qualitative data including—but not limited to—designs such as phenomenology, grounded theory, ethnography, qualitative description, action research, and feminist research will also be considered. Text and opinion papers will also be considered for inclusion in this scoping review.

#### **Methods**

The proposed scoping review will be conducted in accordance with the JBI methodology for scoping reviews (Peters et al., 2020). There were no patients or public involvement in the design, conduct, reporting, or dissemination plans of this research.

#### **Search Strategy**

The search strategy will aim to locate both published and unpublished studies. An initial limited search of MEDLINE and CINAHL was undertaken to identify articles on the topic. The words contained in the titles and abstracts of relevant articles and the index terms used to describe the articles were used to develop a full search strategy for CINAHL, MEDLINE, Embase, Scopus, SPORTDiscus, and PsycInfo (see Appendix A). The search strategy, including all identified keywords and index terms, will be adapted for each included database and/or information source. A health librarian (SM) was consulted throughout the search strategy

conception. The reference list of all included sources of evidence will be screened for additional studies, as well as backward and forward searching. Only studies published in English will be included. There will be no date range for this review, in order to explore trends across time.

### **Information Sources**

The databases to be searched include MEDLINE, CINAHL, Embase, Scopus, SPORTDiscus, and PsycInfo. Sources of unpublished studies and grey literature to be searched include ProQuest Dissertations & Theses Global and the first 10 pages of Google Scholar. We will also search for grey literature using the Canadian Agency for Drugs and Technologies in Health (CADTH) grey literature checklist *Grey Matters: A Practical Tool for Searching Health-Related Grey Literature* (CADTH, 2019). In addition, relevant organizational, governmental, and health care association websites will be searched including—but not limited to—Canadian Cancer Society, American Cancer Society, National Cancer Society, Cancer Research UK, National Health Institute, National Cancer Institute, Public Health Agency of Canada, Government of Canada websites, and provincial health authority websites.

### **Study/Source of Evidence Selection**

Following the search, all identified citations will be collated and uploaded into Covidence (a citation management platform) and duplicates removed. Following a pilot test of 50 included articles, titles and abstracts will then be screened by two or more independent reviewers for assessment against the inclusion criteria for the review. Potentially relevant sources will be retrieved in full, and their citation details imported into Covidence. The full text of selected citations will be assessed in detail against the inclusion criteria by two or more independent reviewers. Reasons for exclusion of sources of evidence at full text that do not meet the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion, or with an

additional reviewer. The results of the search and the study inclusion process will be reported in full in the final scoping review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) flow diagram (Tricco et al., 2018).

### **Data Extraction**

Data will be extracted from papers included in the scoping review by two or more independent reviewers using a data extraction tool developed by the reviewers. The data extracted will include specific details about the participants, concept, context, study methods, and key findings relevant to the review questions. Before data extraction begins, two independent reviewers will pilot the data extraction tool for five articles, and they will discuss any additional information needed to be extracted.

A draft extraction form is provided (see Appendix B). The draft data extraction tool will be modified and revised as necessary during the process of extracting data from each included evidence source. Modifications will be detailed in the scoping review. Any disagreements that arise between the reviewers will be resolved through discussion, or with an additional reviewer. If appropriate, authors of papers will be contacted to request missing or additional data, where required.

### **Data Analysis and Presentation**

Data on preferences, barriers, and facilitators will be analyzed using the BCW as a coding guide. First, we will conduct a behavioural analysis of non-curative cancer patients, preferences, barriers, and facilitators to participation in exercise programs. Preferences, barriers, and facilitators will be extracted as reported by the study authors and then categorized into the six subcomponents of the BCW's COM-B model of behaviour (psychological capability, physical capability, social opportunity, physical opportunity, automatic motivation, and reflective motivations; Michie et al., 2014). Two reviewers will conduct the data classification using a pre-defined coding manual based on definitions and guidance from the BCW. Any discrepancies will

be resolved by consensus or with a third reviewer. Final BCW categorizations will be reviewed and discussed with the entire research team. Given the focus of this scoping review on mapping existing literature, we will not be explicitly performing a risk of bias assessment.

The PRISMA-ScR (Tricco et al., 2018) reporting guideline will be followed for this scoping review. Study findings will be reported using the PRISMA-ScR (Tricco et al., 2018), as well as the PRISMA 2020 guidelines (Page et al., 2021). The extracted data will be presented in tabular form that aligns with the review objectives and questions. In addition to the tables, a graphic image will be created of the preferences, barriers, facilitators, and strategies found in the included studies. A narrative summary will accompany these presentations and will describe how the findings relate to the review's objectives and sub-questions. Results will be classified under main conceptual categories: study characteristics (including country or origin, study population, study setting, design), outcome measures, barriers, facilitators, strategies/interventions, reported key findings, and implications.

### Conclusion

This review will map key barriers, facilitators, and preferences to partaking in exercise programs for individuals with non-curative cancer. In doing so, this review will identify behavioural strategies to systematically reduce patient barriers and address participant capability, opportunity, and motivation regarding exercise programming and will also inform priorities for future implementation studies.

### Acknowledgements

This review protocol is a portion of a PhD dissertation for the primary author (JEL) in which they are supervised by the second author (GW) and final author (MRK). JEL is supported by the Beatrice Hunter Cancer Research Institute. The authors would like to thank Shelley McKibbin for their contribution and assisting with the search strategy.

### Conflicts of Interest

There is no conflict of interest in this project.

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**Appendix A**  
Search Strategy

1	((cancer* or neoplas* or leukemia* or leukaemia* or tumor* or tumour* or lymphoma*) adj3 (advanced or metast* or “life limiting” or “non curative” or terminal or palliative or incurable))
2	(Exercise or “resistance training” or aerobic* or “motor activity” or “exercise therapy” or “physical activity” or training)
3	(Barrier* or attitude* or preference* or adher* or complian* or persist*)
4	Exp terminal care/ or exp terminally ill/ or exp palliative care/
5	Exp Exercise/
6	“attitude or health personnel”/ or attitude to death/ or attitude to health/ or “treatment and compliance”/ or patient compliance/ or patient dropouts/ or patient participation/ or patient satisfaction/
7	2 or 5
8	3 or 6
9	Exp Neoplasms/
10	4 and 9
11	1 or 10
12	7 and 8 and 11

**Appendix B**  
Data Extraction Instrument

Author	Title	Country	Year	Definition of non-curative cancer	Barriers	Facilitators	Preferences	Strategies	Intervention Details	Key Findings	Implications	Limitations