

PHYSIOTHERAPISTS' PERSPECTIVES ON PROVIDING CARE TO THOSE
LIVING WITH CANCER IN NEW BRUNSWICK

By

Lyne Ouellet

Bachelor of Science (Biology), University of New Brunswick, Saint John, 1996

Bachelor of Science (Physiotherapy), Dalhousie University, 2000

A Thesis Submitted in Partial Fulfillment
Of the Requirements for the Degree of

Masters of Applied Health Services Research

In the Graduate Academic Unit of Interdisciplinary Studies

Supervisor: David Busolo, RN, PhD, Nursing

Examining Board: Danielle Bouchard, PhD, CEP Kinesiology
Dr. Andrea Bombak, PhD, Sociology

This thesis is accepted by the
Dean of Graduate Studies

THE UNIVERSITY OF NEW BRUNSWICK

OCTOBER, 2021

© Lyne Ouellet, 2021

Abstract

The incidence of cancer in Canada is quite high and has an enormous impact on the person, with many side effects. Physical activity and physiotherapy are feasible and safe means of addressing these, yet remain lacking in Canada.

This qualitative study using an interpretive description approach and the theoretical domains framework as a lens was used to examine what physiotherapists perceive as their roles and the place of physical activity in those with cancer for their care. Studies to date have focused on specialized centers in larger urban areas; however, a significant number of those living with cancer are not necessarily getting their care in those larger centers for the duration of their journey. Understanding the services available to them at any time, in any center in Canada are of importance in order to ensure their journey is as comprehensive and holistic as possible.

Dedication

I would like to take this opportunity to dedicate this thesis to my original mentor, Dr. Krista Wilkins. From the moment I met her, I could tell her enthusiasm and depth of knowledge was going to be the driving force I needed to get this done and done well. Dr. Wilkins always had her door open, ready to help me along at any and all of those moments one encounters when starting on this journey as a novice researcher. She was patient, listened to all my thoughts and was even willing to set aside her own qualitative perspectives to assist me on what I thought was going to be a quantitative study. She had a knack for bringing me back to the essentials and focusing on what was most important to produce a relevant and meaningful project. I enjoyed her laugh and smiles as we went along this journey. Although I was not far along when she had to step aside for reasons of illness, I attribute the research question itself to her, the body of knowledge I gained at the outset and I continued on to finish this project as a tip of the hat to her and her dedication to this field.

Acknowledgements

I have many people to thank for their advice and patience as I went through this process. I would like to thank my committee members, Dr. Danielle Bouchard, Dr. Petra Taylor and Dr. Andrea Bombak. I took in all of your feedback and incorporated all of your perspectives to give a well-balanced view of the information. I would also like to thank Dr. L. Keeping-Burke for getting those final steps in place and getting me across what seemed to be a long-awaited finish line.

I would like to thank Dr. Krista Wilkins for starting me off with a solid foundation on how to complete such a task after having worked as a clinician for years before re-entering academia. I would not have accomplished so much without her thoughtful guidance in those formative stages.

I would like to thank Dr. David Busolo for being my constant source of guidance, stepping in at such an unexpected time, when I needed a new supervisor. Your calm disposition and reflective responses to my novice questions allowed me to come to the final product that is in these pages.

Dr. Mary McKenna, your endless amount of energy, knowledge, but most of all your friendly ear was most appreciative during so many times when things were challenging. You always put students first and I was so very lucky to have you involved in this project, as well as so many other aspects of my academic journey. I learned so much more from you than what is evident on paper and for that I will always be thankful.

Certainly, most importantly, I would like to thank the biggest support I have had through these years, my wonderful cheerleaders in my husband Jeff and my two kids

Jacques and Mathieu. You have been there while I have had so many roadblocks but still urging me to continue and see this through. I would most definitely not have been able to get through so many edits and deadlines without you all being so patient and encouraging. I am so very thankful to have had you by my side each and every step and for I hope you all know how much I appreciate all you have done for me in these years. Thank you so much.

Table of Contents

Abstract	ii
Dedication	iii
Acknowledgements	iv
Table of Contents	vi
List of Tables	xi
List of Appendices	xii
Chapter 1	1
Introduction	1
Purpose of this Study and Research Question	5
Definition of Terms	5
Personal Interest in the Study	7
Current Study	7
Significance of the Study	8
Chapter Summary	9
Chapter 2	10
Literature Review	10
Overview of cancer in Canada: Incidence, Mortality and Survivorship	10
Who is a Cancer Survivor?	11
Cancer Survivorship Challenges	12
Cancer Related Fatigue	13

Depression while living with Cancer	14
Pain during Cancer	14
Muscle Dysfunction during Cancer	15
Sequelae to Cancer	16
Cancer Rehabilitation	17
Physical Activity and Cancer Rehabilitation Delivery in Canada	20
Physiotherapists and Cancer Rehabilitation	20
Physiotherapy, Physical Activity and how they impact Cancer	
Related Challenges	21
Cancer Related Fatigue	21
Depression	22
Pain	23
Muscle Dysfunction	24
Services in Cancer Rehabilitation remain lacking	26
Perceptions of healthcare providers regarding Cancer Rehabilitation	27
Patient Perspectives on the Provision of Cancer Rehabilitation	29
Physiotherapists' perceptions on Cancer Rehabilitation	32
Gaps in the Literature	34
Chapter Summary	35
Chapter 3: Theoretical Perspectives	36
Theoretical Domains Framework	36
Application of the Theoretical Domains Framework	40
Chapter Summary	43
Chapter 4: Research Design	44
Interpretive Description	44
Recruitment and Sampling	45

Data Collection Methods	47
Data Analysis	48
Rigor	50
Placement of Researcher	52
Ethics	53
Chapter Summary	54
Chapter 5: Results	56
Domains (Themes)	57
Environmental Context and Resources:	57
Physiotherapists	57
The referral process	58
Lack of physiotherapy services in oncology	60
Being involved preventatively	63
Differences noted from other jurisdictions	64
Environmental Context and Resources:	66
Cancer	
Types of cancer: are they important to differentiate?	68
Social Influences	69
How others see physiotherapy and cancer care	70
How other physiotherapists see their role in cancer care	71
Support systems for physiotherapy and cancer care	72
How exercise/physical activity is perceived by others	75
Skills	76
Most commonly perceived skills	76
Educating others as a skill	77
Assisting with sequelae	78
Listening as a skill	79
Social/professional role and identity	81
Knowing the scope of one's practice	82
Physiotherapists and ability to provide exercise as an intervention	83
Knowledge	85
Improving entry-level knowledge	85

Preparation needed to enter cancer-survivorship care	87
Emotion	88
Job satisfaction	89
Empathy	90
The impact of age	91
Fear of providing cancer care	
Beliefs about capabilities	93
Assisting with quality of life	94
Understanding the underlying reason a cancer survivor may participate in physiotherapy interventions	95
Beliefs about consequences	96
Harmful Consequences	96
Chapter Summary	98
Chapter 6: Discussion	99
Environmental Context and Resources:	99
Physiotherapists	
The referral process	100
Lack of physiotherapy services in oncology	101
Being involved preventatively	101
Differences noted from other jurisdictions	103
Environmental Context and Resources:	103
Cancer	
Geographical space: cancer as a diagnosis or a sequelae	104
Types of cancer: are they important to differentiate?	105
Social influences	106
How physiotherapists and others see physiotherapy interventions in cancer care	106
Support systems for physiotherapy and cancer care	107
Skills:	108
Linked to Beliefs about Capabilities	108
Social/professional role and identity:	113
Linked to beliefs about consequences	113
Knowledge	110
Improving entry-level knowledge	110
Preparation needed to enter cancer care	114

Emotion	115
Job satisfaction and empathy	115
Impact of age	116
Fear in providing care care	117
Theoretical Domains Framework	118
Limitations to this study	120
Strengths of this study	120
Future directions	122
Chapter Summary	124
References	136
Curriculum Vitae	

List of Tables

Table 1. The Theoretical Domains Framework, domains and constructs	126
--	-----

List of Appendices

Appendix I: Recruitment poster	128
Appendix II: Demographics	129
Appendix III: Interview guide based on Theoretical Domains Framework	130
Appendix IV: Informed consent	133
Appendix V: Plan for assisting participants in the event of distress	135

Chapter 1

Introduction

The prevalence of cancer in Canada is staggering. It is estimated that 1 in 2 Canadians will develop cancer in their lifetime, 1 in 4 will die of the same, and it is the #1 cause of death in Canada (Canadian Cancer Society, 2019). However, there is a positive shift occurring. Advancements in cancer detection and treatments have resulted in an increase in cancer survivorship. The 5-year survival rate was at 63% for the years 2012 and 2015, up from 60% between 2006 and 2008, and 55% between 1992 and 1994 (Canadian Cancer Society, 2019).

Cancer's impact on the individual is far reaching, including psychological and physical aspects of their being. The most common side effects are cancer-related fatigue, depression, pain and muscle dysfunction. Cancer related fatigue is the most prevalent side effect reported (Jones et al., 2016; Prue et al., 2006) and depression has been found to be more common in those with cancer than the general population (Krebber et al., 2014). Pain is extremely common, being reported in 64% of those with metastatic or advanced cancer, 59% in those receiving treatment and 33% of those post-intervention (van den Beuken-van Everdingen et al., 2007). Muscle dysfunction, which encompasses loss of muscular strength and composition, has been found to be present in as many as 54% of newly diagnosed colorectal cancer patients and up to 30% in breast cancer patients, as measured by grip strength and upper body exercises (Christensen et al., 2014).

It has been noted that some cancer-related side effects occur in isolation but most occur concurrently. This is called symptom clustering and it has been suggested most patients experience between 8-11 symptoms throughout their cancer survivorship (Cheng

et al., 2009). The side effects may occur at diagnosis or during cancer treatments and may persist long after these cancer treatments are completed (also known as late effects). These in turn can lead to a decline in physical function, decrease in quality of life, inability to return to work or difficulty performing basic activities of daily living. This may result in an increase in burden of care and increase in hospital utilization (Christensen et al., 2014; Krebber et al., 2014; Prue et al., 2006; van den Beuken-van Everdingen et al., 2007).

Physical activity has been found to be beneficial during all points of cancer care to minimize cancer-related side effects (Speck et al., 2010). It has been shown to reduce cancer-related fatigue at a cellular level, improving mitochondrial biogenesis and insulin sensitivity and, in turn, improving the regulation of sleep, mood and diurnal levels of cortisol (Berger, Gerber & Mayer, 2012). Different systematic reviews of randomized control trials further support the notion of physical activity assisting to reduce cancer-related fatigue using a wide range of interventions such as resistance training, yoga, walking and others (Cramp & Daniel, 2012; LaVoy, Fagundes, & Dantzer, 2016; Kessels et al., 2018), and at different points in the trajectory including palliative care (Pyszora et al., 2017). It has been found to have a positive effect for those with depression (Craft et al., 2012; Knapen et al., 2015) and to improve pain, improving quality of life (Mishra et al., 2012). Upper limb dysfunction in women after breast cancer interventions have been found to improve in the domains of strength, shoulder function and with no noted increase in lymphedema when they participate in physical activity (McNeely et al., 2010).

Rehabilitation is common for many health conditions, from cardiac rehabilitation programs to physiotherapy after a joint replacement. It has been described as a variety of

measures aimed at improving and maintaining an individual's optimal function (World Health Organization, 2011). It can address solely the psychological or physical needs of the individual or can be a comprehensive program including all aspects of the individual (Wade, 2006). Physical rehabilitation needs of cancer survivors in Canada have received little attention and few services. In 2011, a survey of cancer centers across Canada found that only 30% of these centers had a cancer physical rehabilitation program and the majority of these programs did not meet the patients' physical needs (Canestraro et al, 2013).

Since this survey, some improvements have been made, with some hospitals offering cancer physical rehabilitation services such as inpatient services for patients “off-service” (not an oncology-specific unit), inpatient rehabilitation services, or to outpatient rehabilitation programs offered in the community setting (Dalzell et al., 2017). Some cancer physical rehabilitation programs are multi-disciplinary, often led by healthcare professionals who have a background in prescribing physical activity, such as physiotherapists (Pyszora et al., 2017; Bennett et al., 2018). Physiotherapists are well suited to leading cancer physical rehabilitation programs as they provide client-centered care in a variety of settings to diverse populations and this care focuses on how and why movement and function take place (Canadian Physiotherapy Association, 2012). Physiotherapists analyze the impact of injury, disease, lifestyle and aim to enhance or restore function to prolong an individual's independence for as long as possible (Canadian Physiotherapy Association, 2012).

To date, the literature has examined the experiences of physiotherapists who are on oncology healthcare teams and their perceptions of what and how cancer rehabilitation

programs are delivered as well as how they perceive cancer survivors experience this care. A quantitative study using a survey of both oncology physiotherapists and nurses indicated three quarters of physiotherapists prescribed activity for 81% of their patients and cited the family and friends of patients advising against activity as their biggest barrier in advocating for such an intervention (O’Hanlon & Kennedy, 2014). Qualitative studies have also been conducted, including a recent one looking at physiotherapists who assist lung cancer survivors (Granger et al, 2018). Interviews and a focus group were used to delve into barriers and enablers to implementing physical activity into their care. A total of eight physiotherapists participated and all agreed physical activity was an important component in lung cancer survivors’ care. However, lack of research evidence in lung cancer in particular, both in quality and quantity, likely impacted their ability to become integrated on such a team. Lack of research likely impeded funding such a position, as well as leading to a lack of other team members being aware of the benefits. Some of the findings indicated that participants felt there was a generally poor culture on the oncology wards in advocating for physical activity. Participants felt emphasis was on providing rest (Granger et al, 2018). They further indicated physiotherapists need to be “the drivers of change” in this area (Granger et al., 2018, p. 855).

Studies that include physiotherapists who have cancer patients on their caseload would be beneficial as they are potential drivers of change. They may have insight as to barriers to implementing physical activity for this patient population when they are admitted to any ward such as general medicine or surgery. They have the training and experience to provide physical rehabilitation care to cancer survivors in a variety of environments and as such are well suited in sharing their perspectives on a wide range of

topics in this domain. How other professions are thought to perceive and refer those living with cancer to physiotherapy, the degree to which physical activity is considered for this population and the knowledge the physiotherapists themselves have in providing care for this population, among other topics, will be explored. This might give direction on how to further implement this care for all cancer survivors who access the health care system at any time, on any hospital unit.

Purpose of this Study and Research Question

The purpose of this study was to explore the perspectives of physiotherapists on cancer rehabilitation, specifically physical activity, as a component of cancer care, seeking to find out their:

1. Roles in assisting cancer survivors with physiotherapy.
2. Perspectives on using physical activity to improve cancer survivors' health.

The following research questions were explored:

1. What do physiotherapists in New Brunswick perceive as their roles in assisting cancer survivors?
2. What are the perspectives on using physical activity to improve cancer survivors' health?
3. What are some of the barriers and enablers to incorporating physical activity into cancer survivorship care?

Definition of Terms

There are several terms that will be encountered that carry a variety of meaning to a range of stakeholders. For the purpose of this study, the following terms that were used had the following definitions:

Cancer survivor: There has been much debate over the term cancer survivor since the term was first used. In 1985, Fitzhugh Mullan, a pediatrician who had been diagnosed with cancer several years earlier, theorized in the *New England Journal of Medicine* that the concept of being a cancer survivor was a “time of life” that went from diagnosis to post-intervention. This diverged from the idea of “cured/not cured” (Marzorati, Riva, & Pravettoni, 2017). For the purposes of this study, the term cancer survivor and cancer survivorship will be used in reference to the moment of cancer diagnosis and beyond.

Cancer Physical Rehabilitation: The World Health Organization defines rehabilitation as "a set of measures that assist individuals, who experience or are likely to experience disability, to achieve and maintain optimum functioning in interaction with their environments" (World Health Organization, 2011). In its most simplistic description, it can be defined as “a problem-solving process”. It encompasses all aspects of the individual, including the physical, behavioral and psycho-social aspects of the situation (Wade, 2006). The definition for cancer physical rehabilitation continues to be debated, with some indicating it is a term reserved for post-intervention (Spence et al., 2010; Stubblefield et al., 2013) to those indicating it encompasses all forms of interventions to minimize disability from the moment of diagnosis (Canestraro et al., 2013; Silver et al., 2015; Garmy & Jakobsson, 2018). For the purposes of this study, cancer physical rehabilitation will refer to the rehabilitation of physical aspects from the moment of diagnosis and throughout the cancer continuum.

Physical activity: Physical activity and exercise are terms that actually mean different things but are often used interchangeably. Physical (or functional) activity is used to describe any skeletal muscle movement that expends energy. Exercise is a structured and repetitive form of physical activity (Caspersen, Powell & Christenson, 1985). The term physical activity will be used in this study to describe what physiotherapists provide as an intervention for cancer survivors. Physiotherapists use many modes of muscular movement to achieve functional outcomes (Canadian Physiotherapy Association, 2012); thus, physical activity encompasses the scope of physiotherapists' interventions in a more inclusive manner.

Personal Interest in the Study

I am a physiotherapist of almost 20 years who has worked on inpatient services in a variety of medical settings and acuities. In those years, I have worked with cancer survivors on floors such as physical rehabilitation, surgery, medicine, ICU and others. I had not been aware of physiotherapists being involved on an oncology team until almost 10 years into my career, which had included working in several provinces at that point. It was then that I became a member of an inpatient oncology unit. I have since had many informal discussions with colleagues, letting them know the type of work I was doing during my time on the oncology unit, and many were surprised. It is from here the research question began: what do physiotherapists know about becoming involved in cancer survivorship care?

Current Study

For this study, practicing New Brunswick physiotherapists who have provided care to cancer survivors in a hospital setting were interviewed to gain insight as to how physical activity can be included in cancer care and the role of physiotherapists in providing this care while patients are in a hospital for any reason.

This research study was conducted using an interpretive descriptive framework. Interpretive description is a qualitative research study design that serves to describe or document a phenomenon and then advance an interpretation of this phenomenon to develop disciplinary knowledge with the ultimate goal of bringing the results in to an applied practice context (Thorne, 2016).

Significance of the Study

This study is unique in that most studies conducted in Canada have been in larger, urban centers (Smith-Turchyn et al., 2016; deOliveira et al., 2018; Dalzell, 2017; Wilson et al., 2017). This study sought the perspectives on physiotherapists who are currently working in the province of New Brunswick, allowing insight into another area of Canada, considered less urban.

Second, it included physiotherapists who are not a part of an oncology specific team but are involved in providing care to cancer survivors in a hospital setting. Previous studies have focused on a variety of health care professionals who are on an oncology unit (Smith-Turchyn et al., 2016; O’Hanlon & Kennedy, 2014; Wilson et al., 2017; Olsson Möller et al., 2018; Sheill et al, 2017); however, cancer survivors access the health care system under different services and inpatient hospital units. By including

these experiences, another layer of barriers and enablers in incorporating physiotherapy services into cancer survivorship care can be identified.

Third, it will assist in providing direction for future research. By identifying how physiotherapists who are working with cancer survivors in any capacity are assisting those who have cancer in a hospital setting will provide a more holistic view of how a cancer survivor may encounter different aspects of the health care system and the presence, or lack thereof, of a physiotherapist. If education needs to be improved, if better care pathways need to be identified, or any other enablers are identified and can be expanded, it could assist administrators and educators in expanding physiotherapists' role.

Chapter Summary

Cancer has an enormous impact on those who receive such a diagnosis. Among the many side effects, physical activity has been shown to have a positive effect on both a cellular and functional level (Berger, Gerber & Mayer, 2012; Cramp & Daniel, 2012; Christensen et al., 2014); however, its formal incorporation in to cancer survivorship care remains lacking (Canestraro et al, 2013; Dalzell et al., 2017). Physiotherapists are health care professionals whose role it is to implement a variety of techniques to improve one's physical functioning. They are fitting to fill the role of advocate for a cancer survivor's physical well-being but do not seem to have become a part of the standard of care for this

population (Canestraro et al, 2013). Therefore, this study sought the perspectives of practicing physiotherapists in the province of New Brunswick who have assisted cancer survivors in any capacity in a hospital setting. This will assist in gaining a more all-encompassing view of some of the barriers and enablers of incorporating such care into cancer survivorship.

Chapter 2

Literature Review

The following chapter will review relevant literature, expanding on incidence, mortality and survivorship of cancer in Canada. A description of a cancer survivor will be discussed, followed by many variables cancer brings, with the most common sequelae examined in further detail. Cancer rehabilitation will be identified as a means of addressing these sequelae. The presence of formal cancer rehabilitation programs in Canada will be discussed, along with the presence of physiotherapists in cancer rehabilitation programs. There is literature supporting the provision of physical activity as

supervised by physiotherapists and the most common sequelae will be examined in further detail so as to highlight these benefits. The perceptions of various health care professionals and cancer survivors in incorporating physical activity in cancer survivorship will be explored, along with physiotherapists' perceptions on such care. This will lead in to gaps in the literature, which could be improved by undertaking the current study.

Overview of cancer in Canada: Incidence, Mortality and Survivorship

With an estimated 604 Canadians getting a new cancer diagnosis daily, and 225 Canadians expected to die from cancer daily, the impact on Canadians is unmistakable. Overall, the incidence of cancer is high. As of 2019, an estimated 220,400 new cases will occur. Its mortality rate was equally high, estimated at being 82,100. It is actually the leading cause of death in Canada, responsible for 30% of all deaths (Canadian Cancer Society, 2019).

Cancer is actually a set of over 100 illnesses but is generally referred to as one illness affecting many body systems (Canadian Cancer Society, 2019). Lung, colorectal, breast and prostate cancers, respectively, are the most common types of cancers but bring various outcomes. As an example of the differences between these cancers, lung and colorectal cancer were the most common types of cancers diagnosed as of 2019; however, lung cancer had a 5-year survival rate of 19%, and colorectal cancer's 5-year survival rate was 65%. Breast and prostate cancers also had a better 5-year survival rate than lung cancer, with breast cancer being at 88% and prostate at 93%. Gender has a slight impact as well, where males are more likely to be diagnosed with cancer, and

women are more likely to survive a cancer diagnosis (Canadian Cancer Society, 2019). Cancer has been associated as an illness of increasing age but can affect anyone at any time. The most current data in New Brunswick indicates 75.2% of new cancers in men and 84.9% of new cancers in women occurred in those over the age of 60 (New Brunswick Cancer Network, 2013). Where one lives in Canada has also been suggested to have an impact on the likelihood of getting a cancer diagnosis. New Brunswick has some of the highest incidences of cancer in the country, being lower to only Newfoundland and Labrador, Prince Edward Island and Nova Scotia, and higher than the national incidence rate (Statistics Canada, 2018).

Who is a Cancer Survivor?

In 2006, the Institute of Medicine's published a report aimed at improving cancer survivorship care. This continued the debate of who is a cancer survivor. As outlined in the document, historically cancer was considered incurable, thus the term survivor was meant to refer to the friends and family who remained. With the advent of new treatments in the 1960s, the term survivor then evolved to referring to those who survived 5 years post-intervention. (National & National, 2005). From there, cancer survivor evolved to meaning someone from the moment of cancer diagnosis, as first attributed to the physician Fitzhugh Mullan, a pediatrician who had had cancer himself (Mullan, 1985). He indicated there were different seasons of survival. The first is the acute, where diagnosis and treatment to slow and/or stop the progress of the illness occurs. This can be followed by the extended survival phase where the illness is either in remission, or intermittent interventions occur. He describes the last season as the survival season,

where cancer has been “cured”, however the person now has forever been impacted by this experience (Mullan, 1985).

This term is evolving, with indications that some who have had a cancer diagnosis do not accept the term “cancer survivor” to describe themselves. They feel it does not fully capture the different phases of living with cancer (Park et al., 2009; Rees, 2018; Berry et al., 2019). Those who have a poor prognosis feel they will not “survive”. Also, those whose cancer has been caught early and minimal interventions are needed do not feel they have earned the designation of “surviving” something that others have had to undergo much more in order to do so (Rees , 2018; Berry et al, 2019). As such, this document will use the term “living with cancer” in order to capture the moment of diagnosis and beyond.

Cancer Challenges

Where cancer survivorship encompasses many points along the disease’s trajectory, it is easily understood to bring many challenges. With more people surviving cancer and its interventions, and for longer periods, a new focus on survivorship has occurred. Long term and late effects of cancer and cancer treatment can increase health care costs and decrease length and quality of survival (Aziz, 2007). The need to continue monitoring and surveillance strategies at this time are necessary, as well as the need to provide appropriate interventions to assist with issues such as chronic fatigue, neurocognitive deficits, psychosocial aspects, pain, muscle dysfunction and others (Aziz, 2007). The most common challenges reported by patients are cancer related fatigue, depression, pain and muscular dysfunction. These can occur in isolation, but most often

occur concurrently and in some cases one side effect may exacerbate others, leading to increased length of hospital stay, decreased quality of life and potentially death (Bower, 2014; Craft et al., 2012; McNeely et al., 2010). The following will look at each of these side effects independent of the others.

Cancer Related Fatigue

Cancer related fatigue has come to be a well-documented and persistent side effect of cancer. It has been described as more debilitating than “normal” fatigue and is not related to energy expenditure. A definition put forth is cancer related fatigue is a “persistent and subjective sense of physical, emotional and/or cognitive tiredness or exhaustion related to cancer and/or cancer treatment that is not proportional to activity and interferes with usual functioning” (Bower, 2014, Box 1). It does not improve with increased rest or decrease in activity. Prevalence estimates suggest that it occurs in 25% to 99% of those receiving treatment, depending on cancer population type, and has been said to be the most common cancer-related side effect (Berger et al., 2012; Bower, 2014; Pearce et al., 2017). It can be elevated before treatment and increase during interventions, leading some to discontinue those interventions. Fatigue generally improves after the completion of treatment; however, studies of long-term survivors suggest one quarter to one third of 10-year survivors continue to experience fatigue (Bower, 2014; Prue et al., 2006). It has a negative impact on return to work, social relationships and independence. It may decrease quality of life during and after treatment and may lead to a shorter survival period (Bower, 2014).

Despite its prevalence, it is an under-reported symptom not often sought out by health care professionals nor is its impact on the individual fully understood. There remains a lack of a standardized tool for measuring cancer related fatigues, and its contributing factors are considered multi-factorial (Bower, 2014; Prue et al., 2006; Tian et al., 2016).

Depression during Cancer

Depression has been shown to occur at a higher rate in those with cancer than the normal population (Krebber et al., 2014). It has been associated with feelings of sadness, changes in sleep and appetite and a decreased quality of life (Craft et al., 2012).

Depression in cancer can lead to poor compliance with proposed interventions and reduced survival (Craft et al., 2012). Given the magnitude of the illness, it seems quite understandable depression could develop at some point during the trajectory. Factors such as decreased psychological coping skills in dealing with types or severity of symptoms, or the presence of a poor cancer prognosis could lead to an increased risk of a depressive episode. Biological factors could pre-dispose one to such an incident, such as some steroids or interferon changing one's serotonin levels. Lifestyle factors, such as the use of tobacco or alcohol could also increase the risk of developing depression in those living with cancer (Craft et al., 2012). Current interventions tend to primarily involve pharmacological and psychotherapeutic interventions (Craft et al., 2012).

Pain during Cancer

The prevalence of pain during cancer is certainly a great burden many experience (van den Beuken-van Everdingen, 2007). These values were based on a systematic

review of literature over the span of 40 years. A more recent update of such a review was undertaken, and values remained similar, despite an increase of 35% in articles focusing on addressing cancer-related pain since the original publication (van den Beuken-van Everdingen, 2016). There was even a “global year against cancer pain as undertaken by the International Association for the study of pain” (van den Beuken-van Everdingen, 2016, p. 1078) which seems to have resulted in an increase in awareness among health care professionals and patients alike as to the severity and prevalence of such a symptom. Despite this awareness, it would appear nothing had changed in the following 10 years. The authors put forth the possibility that patients with cancer are getting older and live longer and thus their pain patterns are different than the previous study. They also put forth the need to introduce more psychological interventions, rather merely focusing on pharmacological options, but interestingly there was no mention of exercise and rehabilitation as a possible option in decreasing one’s pain (van den Beuken-van Everdingen, 2016).

Muscle Dysfunction during Cancer

Alterations in muscle and their ability to function normally can be the result of a variety of factors during cancer care. Muscle weakness, decreased range of motion, and loss of muscle mass are considered to be components of muscle dysfunction. During cancer, some may experience alterations in intercostal muscles (muscles along the rib cage), which can alter one’s breathing patterns as a result of radiation for any number of cancers, such as breast cancer, lung cancer or others where radiation has been targeted to the chest region (O’Donnell et al., 2016; Ha et al., 2018). Muscle dysfunction in one’s

upper limb is commonly reported by breast cancer patients who have undergone mastectomies, resulting in decreased strength and range of motion (Kenyon et al., 2018; McNeely et al., 2010). Toxicity from cancer treatment can impact one's ability to maintain their balance putting them at an increased risk of falls (Guerard et al, 2015). Patients receiving androgen-deprivation therapy as a means of decreasing tumor growth during prostate cancer treatment have their body composition altered, resulting in a decrease of lean muscle mass and an increase in adiposity. These have been associated with decreased strength, increase falls and increase risk of fracture (Gardner et al., 2014).

Sequelae to cancer

With the presence of these symptoms, either in isolation or in combination, the individual may be left with a decrease in quality of life, decrease in independence, an inability to return to work, increased burden of care on a family member or friend, and increase in hospital utilization (Silver et al., 2015). They may lead to decreased compliance with cancer interventions, and ultimately in decreased survivability (Silver et al., 2015). The burden the individual and their loved ones carry is obvious, and its implications on the healthcare system is quite notable.

The financial costs of cancer are large. As of 2012, Canada's healthcare system spent a total of \$7.5 billion on cancer care, more than doubling in a 7-year period. The costs most linked to this rise were hospital-based care, such as chemotherapy and radiation therapy. This analysis did not include diagnostic and screening tests, and it was unable to capture private insurance coverage for prescriptions and as such, could actually be an underestimate of total costs (deOliviera et al., 2018).

This value also lacks incorporating the cost of caregiver support. It is quite common that when someone is diagnosed with cancer, their support network, namely friends and family, are also impacted. This can result in family members taking time off work to assist with attending medical appointments or providing care at home for their loved one and thus being away from their paid employment. According to Statistics Canada, family members providing care for loved ones is mostly due to ageing, followed by cancer as the second reason for caregiving. It is estimated that it costs the economy a total of \$1.3 billion in this loss of productivity annually (Government of Canada, 2014).

Cancer Rehabilitation

With an increased focus on cancer and its implications for the individual and on the healthcare system in general, an increased focus on cancer rehabilitation as a means of addressing these challenges has begun to gain acceptance.

The first study conducted on patients who had cancer and were provided with exercise as an intervention can be traced back to Dr. Winningham and Dr. MacVicar at Ohio State University in the US. Up to this point, medical advice was to rest and cancer patients were told to avoid exercise for fear of harm. This study was conducted in the not so long-ago time of the 1980s. The idea to accept their findings was slow to gain momentum, and it was not until the mid to late 1990s did exercise research in the field of oncology begin to have enough groundwork behind it to gain acceptance (Jones & Alfano, 2013).

The need for rehabilitative interventions worldwide far exceeds the workforce available to meet these needs. The 2015 Global Burden of Disease Study indicated that

74% of the total years lived with disability worldwide include conditions, such as cancer, for which rehabilitation is beneficial (World Health Organization, 2017). Indeed, cancer specifically has seen an increase of 36.6% years lived with disability. The need for rehabilitation services is forecasted to continue increasing, given the aging population, as well as improved acute care and survival rates for many non-communicable and chronic conditions (World Health Organization, 2017).

A recent bibliometric analysis indicated that cancer has seen an increase in research publications pertaining to rehabilitation in the last two decades, increasing by a rate of 810% between the years of 1992-2016, albeit slower than overall cancer publications, which saw an increase of 1056% in the same time period (Stout et al., 2018). What is encouraging, however, is the increase in cancer rehabilitation attention is growing at a faster rate than rehabilitation in general (Mewes et al., 2012; Stout et al., 2018). This seems to be attributed to increased funding in the years of 2000 and onward, as well as the Institute of Medicine's publication in 2006 "Cancer patient to cancer survivor: lost in transition" which brought more attention to rehabilitation as being an important aspect of cancer care (Stout et al., 2018). Further analysis revealed, however, that *physical* rehabilitation in cancer care was actually growing at a slow pace, where the focus of rehabilitative efforts seemed to be focused on the *psychological* and *psychosocial* components of care. The interesting paradox is the anxieties and various levels of depression patients report are usually due to the physical impairments and disabilities brought on by cancer and its interventions (Stout et al., 2018).

Formal Support for Provision of Physical Activity and Rehabilitation in Cancer Care

Most recently, Australia has attracted international attention by being the first country to come out with a strong position statement regarding physical activity during cancer as published in the Clinical Society of Oncology of Australia (COSA), re-published in the Medical Journal of Australia and endorsed by the Cancer Council of Australia, Medical Oncology group of Australia Incorporated, among others (Cormie et al, 2018). In broad terms, it states as a minimum, all those with cancer should avoid inactivity and return to normal functioning as soon as possible following a cancer diagnosis (Cormie et al., 2018). Furthermore, COSA recommends that best practice should be to refer patients to either an accredited exercise physiologist or physiotherapist for proper activity program development and that all health professionals involved in cancer care have a responsibility to promote such recommendations for exercise and activity (Cormie et al., 2018).

The Institute of Medicine released a detailed document in 2006, which outlined a variety of recommendations in order to improve cancer survivorship. It included the development of consensus- and evidence-based guidelines. This resulted in a variety of professional organizations creating guidelines in the domains of physical and psychosocial care for those living with cancer (Nekhlyudov et al., 2017).

Various types of cancer societies have developed guidelines for exercise in the specific populations they represent. The American Cancer Society has developed specific guidelines for those who have had prostate cancer. It outlines 3 or more hours a week of vigorous activity for those with prostate cancer has been associated with a 61% reduction in prostate-specific death (Skolarus et al., 2014). One of the most studied types of cancer in the sphere of exercise provision is breast cancer. Indeed, several meta-analyses and

systematic reviews of various randomized controlled trials have highlighted the enormity of the impact exercise can have on this illness. It has been shown to improve immune function, chemotherapy completion rates, decrease hospitalization duration and assist with fatigue, pain and nausea (Hayes et al., 2011).

In Canada, there is yet to be a nation-wide, all-encompassing statement as to the effectiveness of physical activity; however, Cancer Care Ontario has an in-depth guideline for the provision of exercise for those who have cancer (Segal et al., 2015). As a minimum, it says up to moderate amounts of exercise are safe for those who have cancer both during and after treatment. It goes on to say that this activity will improve quality of life as well as improve muscular and aerobic fitness (Segal et al., 2015). The United States has similar guidelines, as provided by the American College of Sports Medicine (Schmitz et al, 2010), as does the UK with the MacMillan Cancer Support review of literature (MacMillan Cancer Support, 2017).

Physical Activity and Cancer Rehabilitation Delivery in Canada

Despite the evidence showing the benefits of physical activity for those living with cancer, the provision of such services is scattered throughout Canada. With cancer being so prevalent amongst so many Canadians, and survivorship increasing, there is need to examine the use and impact of physical activity on cancer survivorship in Canada. The impact on the health care system can no longer be ignored, not to mention the emotional toll the loss of function has on the person. Indeed, it is suggested that some people may survive cancer provided they have supportive care to maintain and/or regain function (MacMillan Cancer Support, 2012; Cormie et al., 2018).

Cancer rehabilitation can be delivered on an individual basis, by one health care provider, or as a more formal team approach, enlisting a variety of health care professionals. It may focus on one aspect, such as cognitive or physical, or can be more holistic, looking to address cognitive, emotional, and physical aspects of the person. It can be done in a hospital setting, on a variety of hospital units, in a community setting, or in a person's home (Marker et al., 2018;). A person living with cancer may participate in cancer rehabilitation at any and all points during their cancer continuum, encountering a variety of approaches by a variety of professionals.

Physiotherapists and Cancer Rehabilitation

As highlighted in the COSA position statement, physiotherapists are well-qualified health professionals who can promote physical activity as a component of cancer rehabilitation for those with cancer (Cormie et al., 2018). Physiotherapy is an autonomous, evidence-led profession that is supported by all legal jurisdictions across the country. Physiotherapists are primary care practitioners, meaning patients can access them directly, with no need for a physician's referral. Physiotherapists are client-centered, providing care in a variety of settings to diverse populations (Canadian Physiotherapy Association, 2012). As a discipline, it focuses on how and why movement and function take place. Physiotherapists analyze the impact of injury, disease, lifestyle and aim to enhance or restore function to prolong an individual's independence for as long as possible. Physiotherapists seek to improve health, lifestyle and quality of life with a variety of techniques, from education, personalized therapeutic exercise, physical and/or electrotherapeutic agents, cardiorespiratory techniques including airway clearance

methods, among others (Canadian Physiotherapy Association, 2012). In relation to cancer, physiotherapists can assist at various stages to gain and maintain function while considering the impact cancer can have.

Physiotherapy, Physical Activity and how they Impact Cancer Related Challenges

Cancer Related Fatigue

As indicated to earlier, cancer related fatigue is much more debilitating than normal fatigue, is not alleviated with rest or decreased activity. It is a complex, multi-dimensional phenomenon that spans the physical, emotional and cognitive aspects of one's being (Bower, 2014; LaVoy et al., 2016). Contrary to what most would think, cancer related fatigue has actually been found to improve with the provision of physical activity and physiotherapy (Speck et al., 2010; Mishra et al., 2012, LaVoy et al., 2016). The tools for measuring fatigue have improved over the years and an increase in literature has demonstrated more evidence to support physical activity as a safe means of improving fatigue. Since 2005, studies almost tripled, with 93% of these studies demonstrating positive results in providing physical activity on decreasing cancer related fatigue and 50% of these were statistically significant (Speck et al., 2010). It is believed physical activity acts in a multi-dimensional fashion to improve fatigue. It likely provides psychological benefits by increasing confidence, allowing one to set and achieve goals and may also improve sleep (LaVoy et al., 2016). It has been suggested it counteracts deconditioning through increased muscle mass and increased aerobic capacity (LaVoy et al., 2016). Cancer-related fatigue has been associated with increased inflammation, for which physical activity has been shown to increase levels of anti-inflammatory cytokines,

which may then contribute to lessening the impact of cancer-related fatigue (LaVoy et al., 2016).

Depression

Much like fatigue, the provision of physical activity as a means of alleviating depressive symptoms may seem counter-intuitive; however, it has been found to be beneficial for those living with cancer at various points along the cancer continuum (Marker et al., 2018; Albrecht & Taylor, 2012; Gracey et al., 2016, Dolan et al., 2018).

The environment within which the program is carried out appears to impact the outcome on depression. For some programs that were completed independently at home, depressive symptoms were seen to increase (Craft et al., 2012). This is supported by literature that indicates group or monitored exercise is beneficial to those with depressive symptoms in the general population. It is suggested the components of socializing in a group physical activity context, or with closer supervision by a trained professional who is available to support, motivate and educate can increase feelings of accomplishment and decrease depressive symptoms (Craft et al., 2018, Dolan et al., 2018). Where the physical activity is carried out seems to be of importance to those with cancer. Those with advanced-stage cancer reported feeling more comfortable in an environment that supported group activity and also accepted illness as being important. They did not feel a gym where the normal population attended their workouts was acceptable (Albrecht & Taylor, 2012).

The timing of implementing physical activity does not appear to be a factor in assisting with depression. It has been demonstrated that those who are provided with

exercise at the moment of diagnosis, and through to advanced stages all benefit from decreasing depressive symptoms with the provision of physical activity (Craft et al., 2018; Abrecht & Taylor, 2012). Finally, the type of activity can vary, where yoga, walking, strength training and aerobic exercise all assist in decreasing depressive symptoms, however in general physical activity at moderate to vigorous intensities appeared to demonstrate the most significant changes in depressive symptoms (Mishra et al., 2012).

Pain

Pain has been noted to be common through any and all points along the cancer spectrum and can be either short term or chronic. It may be the result of the illness itself altering the body's normal functioning systems, or from interventions such as surgery or radiation. The most common method of treating pain has historically been pharmacological; however, it has come to be understood that physical therapy interventions are effective in alleviating a variety of pain symptoms (van den Beuken-van Everdingen et al., 2016; Cheville & Basford, 2014; Glare et al., 2014).

Physiotherapy has been found useful in alleviating pain with the use of various strategies. Some physiotherapy interventions involve altering the perception of pain through nociceptors. This includes the application of heat or cold, the use of electrical stimulation through machines, applied with the use of electrodes placed at strategic locations or desensitization techniques such as compression garments or therapeutic massage, which serve to decrease edema and therefore decrease pain (Cheville & Basford, 2014; Glare et al., 2014).

Physiotherapists also assist with offloading bones, joints and muscles as these can become painful to move as a result of cancer and its interventions. This offloading can be accomplished by providing appropriate ambulatory assistive devices, recommending appropriate transfer devices such as sliding boards or hoist lifts, educating and training to use compensatory movements and proper positioning while static, such as when sitting or lying in bed. Positioning can involve the use of pillows, bolsters and educating family and other healthcare professionals on timely re-positioning (Cheville & Basford, 2014; Glare et al., 2014).

The provision of physical activity has also been found to be helpful in alleviating pain (Cheville & Basford, 2014; SantaMina et al., 2014; Glare et al., 2014; Mishra et al., 2012). It is suggested it is helpful as it decreases weakness, allowing limb movements to occur in a more natural fashion thereby improving musculoskeletal function and may assist in offloading otherwise potentially painful areas (Santa Mina et al., 2014; Cheville & Basford, 2014). It may also decrease inflammation in painful areas by increasing blood flow as a result of either muscle contractions or by stretching, which could increase space in the desired area (Glare et al., 2014, Cheville & Basford, 2014).

Muscular Dysfunction

As was mentioned when discussing the presence of multiple symptoms concurrently (Cheng et al., 2009), the same can be said regarding physiotherapy and physical activity interventions and their ability to assist with multiple systems concurrently. Muscular dysfunction can occur as a result of a variety of factors that are encountered during cancer, and can lead to fatigue, pain and subsequently depression as a

result of these impairments. Weakness, decreased range of motion, loss of balance can all occur as a result of a muscular dysfunction. These can be treated by resistance training, stretching, walking and other forms of physical activity and physiotherapeutic interventions. Physiotherapy can readily assist with a number of these late and long-term adverse sequelae. One of the most recent studies to illustrate this found that improvements in quality of life and cardiovascular fitness were maintained 15 months after a physiotherapy intervention (a 12 week program) in patients with a variety of cancer diagnoses. The study also completed a simultaneous cost-analysis, which showed completing a 12-week exercise program decreased costs in such areas as use of medication and absence from work for as long as 15 months post-physiotherapy intervention (Kampshoff et al., 2018).

Falls can also result from muscular dysfunction. Approximately 1 in 3 Canadians aged 65 and older are likely to fall at least once a year and hospitalizations due to falls account for approximately 85% of injury related hospitalizations for seniors (Pearson, St-Arnaud and Geran, 2014; Al-aama, 2011). The risk of falls increases with cancer as toxicity from cancer treatments can decrease their function (Guerard et al, 2015). It is therefore an extremely important issue cancer care professionals should regularly screen for in elderly cancer patients.

Cancer and age are closely linked. The risk of cancer increases with age: 90% of new cancer cases and 96% of cancer deaths in Canada are in those 50 and over. The highest proportion of deaths in Canada will occur in those 80 and older (34.1%) (Statistics Canada, 2017). Falls are the result of multiple factors, among which muscular dysfunction is a component. The value and impact of physiotherapy on this side effect of

cancer cannot be understated. It has been shown physiotherapy programs targeted at improving balance, strength and gait training have reduced mortality and hospitalization rates, quality of life, social interaction and overall well-being. It also decreases patient perceived fear of falling. The fear of falling can lead to the patient becoming less physically active (Skelton et al, 2005; Public Health, 2012; Madureira et al., 2010; Irvine et al., 2010). This economically translates into a savings of \$5310 per fall averted, and the cost of treating a fall is 1.85 times higher than implementing a falls prevention program (Irvine et al., 2010; Hektoen et al., 2009).

Services in cancer rehabilitation remain lacking

Despite the evidence of how physical activity and physiotherapy services assist with cancer in so many realms, services remain lacking in Canada. The provision of either structured programs or the presence of a physiotherapist on an oncology unit remain scant (Canestraro et al., 2013). Many continue to advocate and research how to implement such services; however, the mainstream healthcare system is still not aware of the benefits. As outlined above, falls in the elderly who have cancer are an issue as a result of both their age and cancer-related side effects. However, it appears oncologists are not aware that a big proportion of their caseload is at a risk of falls. A study sought to determine how often oncologists actually screened for falls in their patients. The study first determined self-reported falls among patients and the oncologists were blind to the results. Of the 528 screened, 125 had reported a fall. Of those who had reported a fall, only 10% had been screened by the oncologists, and only 6% of those screened had a referral to PT/OT or a geriatrician. Upon examining the referrals to a PT or OT, 50% of

the completed referrals for were for lymphedema, not for gait/balance assessments. The lack of referrals is likely linked to a lack of awareness by oncologists on effective interventions that could reduce the risk of future falls. Further examination into oncologists' knowledge in this field would be beneficial (Guerard et al., 2015).

Perceptions of healthcare providers regarding cancer rehabilitation

With the presence of compelling evidence to support cancer rehabilitation, physical activity and the presence of physiotherapists to deliver such services, many have turned their attention to studying how healthcare professionals view these roles in the care of cancer as a means of developing better care strategies (Sheill et al., 2017; Cantwell et al., 2018; Smith-Turchyn et al., 2016). It is possible if health care professionals do not value or are aware of such interventions, this may be a barrier to implementing them.

One of the most prominent and important health care members a cancer patient will meet is their oncologist. During that interaction, many components are discussed; however, it would appear one's physical function is not often included. As discussed previously, it appears the discussion of falls is not usually breached, but it also seems the general question of how one is functioning is not routinely questioned. It has been found that oncologists are very aware of the benefits of physical activity, but as few as 28% discussed it in the previous month with their patients (Jones et al., 2005) or discuss it with less than half of their caseload (Sheill et al, 2017). Interestingly, it has been shown that a mere 30 second statement to breast cancer patients recommending physical activity

actually increased their activity levels compared to controls by 30 minutes a week (Jones et al., 2004).

Oncologists and physicians involved in cancer care have reported not being aware of the harms physical activity may pose to their patients, and as such decide to avoid the discussion altogether (Sheill et al., 2017). For instance, most (97%) agreed incorporating physical activity is beneficial for those living with cancer but 44% indicated they were not confident in their ability to prescribe it. They were also concerned in those with advanced cancer who were at risk of pathological fractures, despite evidence indicating individually prescribed programs incorporating movements that decreased load and shear forces on vulnerable areas were beneficial (Sheill et al., 2017). This illustrates the need of increased education for oncologists to understand the benefits in even the most impaired person who has cancer, and further referral to a qualified health care professional, such as a physiotherapist, would assist in ensuring a safe and appropriate physical activity program (Sheill et al., 2017).

Oncologists are not alone in their discomfort with physical function discussions. Non-physiotherapy/exercise physiology professionals have indicated a lack of knowledge regarding appropriate exercise recommendations as a reason they do not discuss the topic (Cantwell et al., 2018; O’Hanlon & Kennedy, 2014; Smith-Turchyn et al., 2016; Williams et al, 2015). Barriers also included lack of time; lack of proper resources, such as appropriate professionals, facilities or educational materials; or even personal limitations, such as not being physically active themselves (Smith-Turchyn et al, 2016; Daley et al., 2008; Williams et al, 2015).

When a variety of health care professionals (who worked in a large Southern-Ontario urban oncology center that did not have a physiotherapist on staff) were asked about their knowledge of the benefits of exercise, most acknowledged exercise was of benefit; however, they did not regularly discuss it with patients (Smith-Turchyn et al, 2016). Furthermore, the idea that a modern, urban oncology center assisting breast cancer patients does not have a program in place to assist with discussing exercise and functional activity is indicative of the larger issue of the gap in services for this population. Breast cancer is amongst the most studied in the realm of exercise and rehabilitation therapy (Stout et al., 2018) and as indicated before, was the first form of cancer to be formally studied for its response to exercise (Jones & Alfano, 2013). The Canadian Cancer Society has guidelines specifically developed for exercises after surgery for breast cancer that were published initially in 2015 (Canadian Cancer Society, 2015). In them, they specifically name physiotherapists as the health care team member who could readily assist in assessing and assisting with the development of a proper activity treatment plan (Canadian Cancer Society, 2015).

Some healthcare professionals cited barriers to discussing exercise as patient barriers. These include the perception that patients have a negative attitude towards exercise (Smith-Turchyn et al, 2016), lack of patient interest (Williams et al, 2015), poor exercise compliance or patients' family or friends recommending rest and avoidance of activity (O'Hanlon & Kennedy, 2014). Some health care professionals also felt bringing up the topic of exercise might be perceived as blaming the patient for having cancer (Williams et al, 2015), or that it is an overwhelming time and speaking of exercise could be seen as insensitive (Smith-Turchyn et al, 2016).

Patient perspectives on the provision of cancer rehabilitation

The initial time spent during post-treatment for cancer can be a time of transition, where the person goes through a period of being “patient” to being “survivor”. Some have indicated they feel a sense of abandonment by the system that took care of them so vigilantly and then sent them to a “new normal” with a relative lack of support (Keesing et al, 2018). Indeed, the time spent later in the post-treatment phase can expose the patient to continued physical disturbances including fatigue, loss of range of motion and difficulties with returning to work. These can be distressing, even leading some to believe the cancer has returned. Some people living with cancer have indicated they were not told these symptoms would persist and that they “needed to just get through the treatment and things would return to normal” (Binkley et al, 2012, p. 2209). Ambiguous messages about commencing or resuming activity left some fearing they would cause themselves harm (Binkley et al, 2012).

In studies seeking patient’s actual experiences of exercise during their course of treatment, or after, most indicated they not only did not receive education or information on the benefits of exercise, but when they specifically asked various professionals (who were not physiotherapists) about exercise, they were met with ambiguous answers (Koutoukidis et al., 2017). In the case of breast cancer, it is common for patients to have lingering symptoms well past the end of their treatments. Patients reported not being told that their symptoms were potentially going to persist for years and were not provided with tools to deal with them, namely exercise. Some even reported the presence of either lingering or new symptoms were particularly distressing, as they were concerned it meant a recurrence of cancer (Binkley et al., 2012). Both health care professionals and patients

alike mentioned patient barriers to completing exercise; however, many patients express a desire to participate and even state they felt capable (Blaney et al, 2013; Sheill et al, 2017)

Patients who were recruited to participate in an activity program indicated how pleasantly surprised they were as to the benefits they felt after becoming active. As one stated, "I suppose I was pleasantly surprised that I was able to do more, you know? I don't know whether it's part excuse or what the last few years has thrown at us, that I kind of maybe had convinced myself that I wasn't able to do a lot." (Bennett et al, 2018, p. 2617). Some indicated they were able to return to work, and many mentioned how it helped them mentally to resume both simple and complex tasks they had previously felt they could not complete (Bennett et al, 2018).

The notion of physiotherapy adding to a more holistic approach to patient care is often expressed by patients (Bennett et al, 2018; Dahlin & Heiwe, 2009; Paltiel et al, 2009; Pidlyskyj et al, 2014). Some indicated that a physiotherapist provided motivation, positivity and encouragement, leading to a sense of emotional support (Pidlyskyj et al, 2014). Some viewed physiotherapists as health care providers who could see their situation as a whole and felt very involved with decisions in goal setting, leading to independence. This in turn led to a feeling of being less of a burden and a general sense of relief (Dahlin & Heiwe, 2009). Giving patients a sense of control over their care also can lead to a better quality of life, even during palliative care (Dahlin & Heiwe, 2009). Some embraced activity as an accomplishment, which in turn led to a better coping strategy. For instance, one noted how they were previously unable to sleep well, ruminating over all they could not do. By participating in an activity program, they not

only benefited from the physical gains, but mentally were able to feel “well, I did that” and could rest better at night (Paltiel et al, 2009).

The thought of implementing therapeutic exercise during metastatic and palliative care is most likely not at the forefront of most health care professionals’ or patients’ minds, despite evidence of its usefulness. As a counter-intuitive notion, this population would be the definition of rehabilitative therapy: to restore lost function. It needs to be done without giving false hope of curing lost function but serves to restore independence (Montagnini et al, 2003). It has been reported that among palliative patients, 92% reported being interested, as well as being able, to participate in a physical activity program with walking being the most common type of activity they were interested in. Resistance training was a low priority (Lowe et al, 2010). They described physical activity as “being independent” and “being mobile” as well as “maintaining independence and mobility” during palliative care (Lowe et al, 2010). This links well with the physiotherapists’ role, as it is inherently patient-centered and works on identifying patient goals and then creating a meaningful program for the individual.

Physiotherapists’ perceptions on cancer rehabilitation

In an effort to illustrate the role of physiotherapy in palliative care, a recent study looked at physiotherapists who work on palliative care teams in eight districts in Sweden. The goal of the study was to describe the various activities physiotherapists complete while carrying out their professional duties. The results were synthesized into seven categories (Olsson Möller, et al, 2018). Among these, physiotherapists said they assisted in counteracting any decline in function the patient may have in order to maintain and

possibly regain independence. It found physiotherapists have a strong role in educating the patient, family and team members in symptom management as well as prevention of injuries due to improper positioning/movement. Interestingly, it also found physiotherapists tend to listen, talk and attempt to understand the patient's and family's concerns as a main component in their care. By taking care of the body, the physiotherapist has an interesting opportunity to be able to help the patient connect in a more holistic fashion, allowing the connection with the body to the mind through empowerment, independence and dignity (Olsson Möller, et al, 2018).

The notion of rehabilitative care as provided by a physiotherapist during palliative or advanced cancer was recently supported in the findings of Wilson et al. (2017). A total of ten palliative physiotherapists from both Canada and the US reinforced the idea that palliative care is indeed a unique scope that can be assisted by physiotherapy interventions. They identified that care in this domain requires flexibility on the part of the physiotherapist, acknowledging the disease progression requires constant reassessment and communication with the patient and family. They also identified how important it is to address the psychosocial aspects this period of time brings. One participant noted "the disease is life threatening but also the psychosocial and spiritual aspects of care are important in palliative care" (Wilson et al, 2017, p. 37). The study also indicated those physiotherapists who do not work in this field may not even be aware of the value their own profession. It can provide important, valuable changes to this person's trajectory by increasing quality of life and function (Wilson et al, 2017).

The literature has focused mostly on the views of physiotherapists who are currently working in an oncology setting. By gaining their insight, these professionals can

highlight barriers they encountered in joining such a team and providing adequate care. As some physiotherapists have indicated, those who do not work on such teams may be “scared” and “nervous” as they have been taught to proceed with caution when treating cancer patients for fear of causing harm (Kenyon et al., 2018). Those physiotherapists working on oncology units may become aware, with increasing experience, of the clinical interventions, which actually may assist those living with cancer. Some noted with increasing experience, they were willing to incorporate more interventions than when they had first commenced (Kenyon et al., 2018).

As outlined previously, there are various guidelines available for oncology health care professionals to integrate physical activity into cancer care. However, even those working on oncology units are not necessarily aware of such concrete evidence. One study found only 25% of allied health professionals in a cancer hospital in urban Ontario correctly identified specific guidelines for cancer (Nadler et al., 2017). It is for this reason this current study will include the perspectives of physiotherapists who do not work on oncology units alongside those who do, to get a better understanding of what hospital-based physiotherapists may be aware of in terms of cancer care.

Gaps in the Literature

Currently the focus has been on a variety of health care professionals who work on dedicated oncology teams. Those who incorporate cancer rehabilitation in cancer care, as well as those who are part of individual or multi-disciplinary cancer rehabilitation programs have participated (Smith-Turchyn et al., 2016; O’Hanlon & Kennedy, 2014; Cantwell et al., 2018). Studies have looked at patients who have either participated, or

not, in a variety of these programs (Bennet et al., 2018; Blaney et al., 2010; Blaney et al., 2013; Dahlin & Heiwe, 2009). This has provided insight in to perceived barriers to implementing such a program, as well as some of the successes and gains to be had when these services are added to routine cancer care, to both the patient and the health care system in general.

There are many gaps in services in healthcare in general and most services do not become implemented unless those who can provide those services advocate for their use. To date, physiotherapists do not appear to have increased their participation in cancer care and some insight to this may come from interviewing those who are not part of oncology teams, but who do treat cancer patients. Indeed, as indicated earlier, those who are not members of an oncology team may have reservations as to the interventions they can provide (Kenyon et al., 2018). Given the high prevalence of cancer in Canada, it is very common for any number of cancer patients to seek assistance from other team members, such as orthopedic surgeons, neurologists, cardiologists, etc., and all of whom are regularly supported by physiotherapists on an inpatient hospital unit. In this manner, most physiotherapists have likely assisted in rehabilitating someone living with cancer; however, may not consider becoming a regular member on an oncology unit. It is for this reason the perspective of both physiotherapists who have not worked on an oncology unit, as well as those who have and could provide insight to barriers they encountered when becoming such a team member, will be sought. This could assist in highlighting areas policy makers, educators and future oncology physiotherapists could focus in increasing physical activity services to cancer care.

Chapter Summary

The above chapter focused on the current literature, as it pertains to physiotherapy in cancer care. There are some common side effects as a result of a cancer diagnosis, either from the illness itself or from the interventions used to combat it. There is evidence to support the provision of physical activity, as monitored by physiotherapists; however, services in Canada remain lacking. Other health care professionals involved in oncology care identify the importance of implementing physical activity but make note they lack the necessary skills and/or time to properly address such an issue. Physiotherapists currently are not part of the standard of care for cancer to address this gap. Those physiotherapists on an oncology team acknowledge their colleagues may lack insight as to the benefits their skills can bring to such a population (Kenyon et al., 2018). It is for this reason that the current study seeks the perspectives of physiotherapists in New Brunswick who assist those living with cancer in any hospital-based program. Their perspectives on incorporating physical activity will be examined as a means of gaining a comprehensive view of how to better assist those in need at any point during their care.

Chapter 3: Theoretical Perspectives

This chapter will examine the use of a theoretical framework to further guide and strengthen this study, namely the Theoretical Domains Framework (TDF). This

framework has psychological underpinnings stemming from implementation science, which lends itself well to the current study, which is seeking New Brunswick physiotherapists' perspectives as a means of identifying barriers and facilitators in implementing such a service to those living with cancer.

Accordingly, this study used the TDF to inform data collection (interview guides) and data analysis (assist in allocating themes obtained from the interviews into pre-structured domains). The science of implementation research employs scientific methods to promote the uptake of research findings into everyday clinical care and thus seeks to reduce inappropriate care. It looks at the influences on healthcare professionals' methods and behaviours to enable them to use research findings more effectively ("Designing theoretically-informed", 2006).

Theoretical Domains Framework

The first two chapters outlined how effective physical activity could be in assisting a multitude of outcomes in cancer care, however it also indicated services in this field are relatively lacking. It is common in healthcare to have a discrepancy between evidence-based practice and actual clinical practice (Ubbink et al., 2013). The use of evidence-based practice can help prevent unsafe and inefficient clinical practices, and lead to quality healthcare (Ubbink et al., 2013). The transfer of research findings into clinical practice has been found to be slow and haphazard. The movement of replicating what was found under constrained parameters into real-world situations needs to be guided by understanding the influence of individuals, interventions and the settings of the trials, and how they will interact in a less-defined situation ("Designing theoretically-

informed”, 2006). Implementation science looks to understand these nuances by employing theories to the determinants of behaviour and behaviour change, namely what influences occur to remove/replace existing anecdotal interventions by evidence-based practice (Atkins et al, 2017).

Theories on behaviour change have been employed in implementation science looking at healthcare professionals’ behaviours in carrying out evidence-based practice and yet they have failed to decrease the gap between research and everyday practice (Michie & Prestwich, 2010; “Designing theoretically-informed”, 2006). In a systematic review of guideline dissemination and implementation studies, only 22.5% were found to have used theory, and 79% of these used only one theory. Justification for the use of the particular theory employed was at best poor (Davies, Walker & Grimshaw, 2010). Individual theories have been employed in social and behavioral sciences in an effort to describe behaviours that may influence the implementation of a particular intervention. However, there are several reasons why a single theory may not work. These individual theories may omit context as they are too narrowly defined and limit the ability to apply them in a variety of situations (Michie et al., 2005). Ensuring the choice of an individual theory is applicable to the context at hand is imperative, as in its absence, the circumstances of the intervention will have been ignored (“Designing theoretically-informed”, 2006). Also, the theory may be inadequate, with unclear definitions and inappropriate concepts. An intervention developed as such will not be successful in a predictable manner, leaving one uncertain of how and why an intervention failed (“Designing theoretically-informed”, 2006).

In an effort to make many theories available to researchers, the Theoretical Domains Framework (TDF) was developed. It is a framework born out of many theories and thus acts more as a lens, rather than a theory in itself. The framework attempts to view cognitive, social, affective and environmental influences on behaviour (Atkins et al, 2017). The use of such a framework can be helpful in understanding how to implement the intervention of physical activity into cancer care. It can streamline the process, allowing for the examination of many interdisciplinary influences in enacting this behavior in a clinical setting (“Designing theoretically-informed”, 2006).

The Theoretical Domains Framework was initially developed in phases by three working groups, consisting of international health psychology theorists, health services researchers and clinical psychologists with no prior expertise in implementation science. The result was the creation of 12 domains and 112 constructs. Constructs were defined as components of theories and domains were defined as groups of similarly themed constructs (Michie et al., 2005). These were further used to develop open and closed interview questions that would assist both in assessing the attribute of behavior change needed to result in changing the health care practice being examined, as well as belonging to an identified domain. Refined interview questions were tested in interviews with healthcare professionals and service managers involved in implementation science (Michie et al., 2005).

Since its development, the Theoretical Domains Framework has been used widely to study the implementation of a variety of health care interventions, from barriers and enablers to providing Healthy Checks for Kids in Australia (Alexander, Brijnath & Mazza, 2014), understanding primary care providers clinical behaviours in relation to

HPV interventions (McSherry et al., 2012), how GPs, physiotherapists and chiropractors manage acute low back pain (McKenzie et al., 2010) and perceived barriers to reporting adverse drug events in hospitals by nurses and pharmacists (Mirbaha et al., 2015).

To further improve the empirical basis of the Theoretical Domains Framework, it was re-examined and validated almost 10 years after it was originally designed. After extensive re-examination of the original framework by a different group of international professionals who had a good understanding of behaviour change theory, the most recent form of the TDF was developed. It now consists of 14 domains, and 84 constructs (Cane, O'Connor & Michie, 2012). Advantages identified for this framework include a) comprehensive coverage of possible influences on behavior, b) clarity on these influences, with each domain being represented by component constructs, c) this framework makes links between behaviour change theory and behaviour change techniques to address implementation problems (Cane, O'Connor & Michie, 2012, p. 12). The results from this study generally statistically agreed with the original framework, strengthening the validity of the framework's structure (Cane, O'Connor & Michie, 2012). (Table 1).

Despite its wide use in over 800 articles since its creation, it has been found the TDF had no formal guidance on its use. Indeed, a variety of health professionals indicated lack of time and insufficient expertise in its application limited their ability to use it (Atkins et al., 2017). As a result of this feedback, a guide was created so as to better assist in its usage.

To undertake such an endeavour, an international team of health psychology, sociology, implementation and health sciences researchers, statisticians and various

clinicians with experience in using the TDF met to discuss: current evidence in TDF, gaps in evidence and develop an outline to advance its use. The result was a 7-step process in carrying out the TDF (Atkins et al., 2017). The following will outline these steps, and how they will be incorporated in the current study as a means of understanding the barriers and enablers of implementing physical activity into cancer care and to inform the design of an intervention that could be used to promote physical activity.

Application of the Theoretical Domains Framework

Step 1 Select and specify target behaviours

It has been suggested the more specific the behaviour is identified, the more the specificity of the facilitators and barriers will be determined by a) deciding the appropriate level of specificity, b) who performs the behaviour: when, how and where, and that c) the target behaviour is likely complex. It is thus important to identify the interdependence of team-level behaviours (Atkins et al., 2017).

In this study, the target behaviour is increasing physical activity as a component in cancer care (the what), in particular as being implemented and monitored by a physiotherapist (the who). It will thus be useful to have those who have interacted with those living with cancer so as to identify barriers and facilitators to implanting physical activity into cancer care. The “how” and “where” will be addressed in the interview questions. The interaction physiotherapists have with team members in being either a regular team member or being consulted regularly in their care will also be addressed in the interview questions.

Step 2 Select the study design

This step involves the selection of the study design. As outlined in Chapter 4, this study will employ an interpretive description methodological framework. The TDF has been shown to lend itself well to qualitative studies, where the use of interviews allows the researcher to gain a deeper insight and richer data to ascertain potential mechanisms of action in interventions (Atkins, 2017). Interpretive description seeks to describe clinical phenomena in a natural, constructivist fashion and bring it forward to a clinically relevant, applied format (Thorne et al., 2004; Thorne, 2016), which mirrors the aims of the TDF.

Step 3 Decide the sampling strategy

In using the TDF to examine the perspectives of physiotherapists providing care to those living with cancer, a purposive sampling approach was used. This allowed for the examination of participants based on the TDF constructs. By including those who are not part of an oncology team, an often-overlooked perspective thus far not included in the literature was added.

Sampling strategy also includes the consideration of sample size. This study utilized a sample of 8 participants. This is a number echoed in theory-based interview studies (Francis et al, 2010). There is a balance to the number required. Sampling too large or too small will lead to ethical issues in that they would waste research funds, as well as participants' time (Francis et al., 2010). It has been proposed that in using theory-based content analysis, as in using the TDF, it may be possible to better justify the concept of saturation. Many studies cite data saturation as an indicator that sufficient interviews have been conducted (Francis et al., 2010). This means no new ideas, themes or concepts arise from further interviews. However, showing this can be problematic. For

instance, in conducting two interviews, it may be that the participants were similar in thought, and thus expressed similar ideas. One would have a difficult time, however, justifying that data saturation has occurred and that they solely represent the ideas of the group being targeted. However, in using theory-based content analysis, one can illustrate data saturation has occurred (Francis et al., 2010). In using the TDF and the domain of knowledge as an example, one can see if any new ideas surrounding guidelines, or procedural knowledge are occurring. This same principle can be applied to each domain, examining if any new ideas in a specific domain are occurring. Using an upper limit of 8 interviews as an a priori sample size, one could then conduct 2 more interviews to confirm if any new information is emerging. If there is none, one could say saturation has occurred. If new information emerges, 2 more interviews could be conducted to further ensure saturation (Francis et al., 2010).

Step 4 Develop the interview schedule and collect data.

The Theoretical Domains Framework provides a skeleton to the researcher as it has developed its own interview template. It suggests further developing this template by using language that is relevant to the target sample. In general, an open-ended question is used to elicit a response pertaining to a particular domain, with follow-up prompts to probe more deeply. An interview guide that was used in this study can be found in Appendix III, as adapted from Huijg et al., 2014 and Alexander et al., 2014.

Step 5 Analyze the data

The Theoretical Domains Framework allows for data to be analyzed deductively or inductively, where the latter generates themes that can be considered in relation to the domains provided. It recommends producing a coding guideline, where transcripts are

updated iteratively during data collection, and the interview guide is refined during data collection to obtain a better understanding of the question being studied (Atkins et al., 2017). This aligns itself well with constant comparative analysis in this interpretive description qualitative study. Interpretive description seeks to explore and expand on knowledge that has been identified prior to commencing the study by being open and generating new insights (Thorne, 2016).

As coding proceeds, one response may be applicable to more than one domain. The authors recommend placing the entire response into each applicable domain. As an alternative, a response may not fit into an identified theoretical domain. The authors see this as an opportunity to test the capacity of the TDF to account for all data. They recommend coding this into its own separate code as a means of further examining if this outlier may or may not be a component of the behaviour being examined, and also as a more inclusive description of the participants' practice characteristics (Atkins et al., 2017).

The last step in analyzing the data includes identifying the relevant domains that arose from the data by using three criteria: a) frequency of beliefs or codes, b) examine for the presence of conflicting themes, c) evidence of strong beliefs that can affect the target behaviour. The completion of this step will identify domains that could influence the target behaviour and its implementation into healthcare practices (Atkins et al., 2017), much like the aim of interpretive description is to advance health care knowledge into an applied form (Thorne, 2016).

Chapter Summary

This chapter looked at using the Theoretical Domains Framework as a means of further strengthening the design of this study. It is a framework that has gathered various behaviour change theories together, and thus acts a lens through which one can examine how an intervention can be better implemented into the health care system. It has been widely used in many studies since its inception and has been re-examined in order to increase its validity. Its 14 domains and 84 constructs was used in this study to look at New Brunswick physiotherapists' perspectives on providing care to those living with cancer, and provided a framework to assist in identifying who might be best targeted in future studies to better implement this intervention, be it at a clinician level, management level or system level. This will allow for future studies to better target their questions in order to effectively address this issue.

Chapter 4: Research Design

Interpretive Description

In an effort to assist both policy makers and clinicians alike in advocating and implementing cancer physical rehabilitation and physiotherapy services for oncology patients, an interpretive description was used as the methodological framework to advance the current knowledge base which exists in this field.

Qualitative description is seen as a form of research in and of itself. It seeks to describe the subject matter at hand in its purest form and produces a complete value-ended product (Sandelowski, 2000). Interpretive description is a well-established form of qualitative research and moves beyond description alone. It developed out of a need to go beyond the limits imposed at the time by the traditional forms of qualitative inquiry and allow applied health researchers to conduct sound projects with logical structure and philosophical rationale for the design decisions made by the researcher (Thorne et al., 2004). The approach includes the importance of such methodologies as grounded theory, ethnography and phenomenology and relies on the usage of their established techniques. It is a method which avoids “methodological slurring” that was occurring by researchers simply omitting components of the traditional methodologies and moved beyond the rigidness they imposed to produce a product with which an applied health researcher can describe a clinical phenomenon and advance it in to a clinically applicable form the reader can easily identify (Thorne et al., 1997; Thorne, 2016). It gives structure to applied health researchers to produce legitimate research products whose end result is a sound

framework which seeks to describe a clinical phenomenon and advance it in a clinically relevant, applied format (Thorne et al., 2004; Thorne, 2016).

Interpretive description is an ideal method to address the outlined purpose of the study and answer the research questions. This study sought to explore the perspectives of physiotherapists who are assisting those with cancer in a variety of hospital-based programs. It explored barriers and facilitators as identified by the very professionals who carry out such a service. As such, it looked to describe how these physiotherapists see their role in this field, and then bring that description in to practice to assist a variety of sources: physiotherapists, administrators and policy makers into facilitating the integration of this service as becoming standardized in cancer care.

In producing a quality interpretive description study, much effort must be made in the planning stages to decide the components that will be in place to conduct the study, as it is not a prescriptive method (Thorne, 2016). This includes decisions on who the appropriate participants are, the type of data collection methods that will be used and how they are subsequently analyzed. Indeed, this allows the researcher to ultimately design a study which is most in line with the question that is being posed and with the ontological, epistemological views the researcher holds. This is also likely the researcher's biggest challenge on the outset, as careful consideration of each step must be considered and defended. The ultimate result is to be a strong, coherent product with defined boundaries that orients the inquiry and seeks to advance the disciplinary knowledge base (Thorne et al., 1997; Thorne, 2016).

Recruitment and Sampling

The current study recruited physiotherapists by contacting the College of Physiotherapists in New Brunswick, as well as through invitation via social media (Appendix I). Generally, a physiotherapist works in either a public (or hospital) setting or in a private practice. For the purpose of this study, those physiotherapists who are, or have in the past, worked in the hospital setting participated. Whether they had worked on an oncology-dedicated unit was not necessary, as perspectives from both those who have never worked on a cancer team, as well as those who have entered such a field were sought. Those who have worked only in private practice will not have encountered the issues which were being explored.

Interpretive description maintains that in matters involving human experience, there are multiple truths held by those who have experienced the phenomenon in question. Furthermore, it accepts there are multiple truths, and that saturation is inherently unrealistic, and is a method which seeks to capitalize on outliers (Thorne, 2016). For this, the sample description for this study was well served by interpretive description, allowing those physiotherapists who have not specifically worked on oncology units to vocalize potential challenges they perceive, and blending this with the perspective of those physiotherapists who have been, or are currently, involved with an oncology team. These perspectives combined gave a better sense of how the current system is utilized and can potentially be improved upon.

Purposeful sampling was used in this study. The use of purposeful sampling is strategic, aimed at selecting information-rich cases. It involves identifying and selecting individuals who are knowledgeable about, or who have experienced, the phenomenon of

interest (Palinkas et al, 2015). Studying information-rich cases gave an in-depth, insightful understanding of the question posed in this study (Gentles et al., 2015).

Sample size was to be between 8 to 10 participants. Much debate surrounds the issue of what is an appropriate sample size. Interpretive description designs are well suited for smaller sample sizes, where thick description is created in order to generate knowledge from in-depth data (Thorne, 2004). The purpose of this study is to understand physiotherapists' perceptions in providing care to those living with cancer, and as such the above noted number is useful to highlight the complexity, depth and context of the issue (Gentles et al., 2015).

Data Collection Methods

Demographic data were collected as follows from physiotherapists: the year of graduation from a University program from a school of Physiotherapy, the number of years worked in a hospital setting, the number of years (if applicable) working on an oncology unit, if they worked on an oncology unit, what location and types of units where they have been involved with those with cancer and city demographics (Appendix II).

Semi-structured interviews were the method of choice to obtain relevant data to answer the research question (see Appendix III for interview guide). Interviews are a common form of data in conducting interpretive description studies. They seek to bring subjectively derived knowledge and advance it to a clinically relevant format for the discipline. As such, interviews are a relevant and useful tool in accomplishing this goal (Thorne, 2016). The use of semi-structured interviews allow direction to be provided by the interviewer so as to attempt to find components to the proposed question but will also

allow the participants with an opportunity to freely express their opinions and perspectives as to the subject matter. A semi-structured interview has a fairly detailed guide that is formed on the basis of available literature, which is the structured component. The questions posed by this guide are left open-ended so as to allow the participants to respond freely with the researcher having the option to probe responses further. This intermingling of form and freedom allows the method to have a degree of relevancy to the topic as well as remain responsive to the participant (McIntosh & Morse, 2015).

Data were collected via an online digital medium (Zoom) in order to adhere to Covid-19 restrictions. Face to face interviews have long been the gold standard in interviews (Deakin & Wakefield, 2013; Opdenakker, 2006). They are considered synchronous in time and place and allow for the researcher to observe social cues for the duration of the interview (Opdenakker, 2006). By being in the same space, the interviewer may be better able to create a better interview ambience, leading to better rapport being built (Opdenakker, 2006). This also potentially poses challenges for the interviewer if the location is chosen by the participant and external distractions might occur (Denscombe, 2014). The use of an online digital medium, such as Skype or Zoom, allows for interviews to be conducted between participants and interviewers that are geographically separated by distances that would otherwise not allow them to meet, thus enabling a larger sampling pool. It also allows both parties to choose times that are much more convenient than meeting in person, such as evenings or weekends. The interviewee may feel more at ease to answer questions as the increase use of laptops or mobile phones for such platforms allows them to choose an environment that is most comfortable for

them (Deakin & Wakefield, 2013). Challenges that have been proposed include a lack of rapport that may form during a face-to-face interview, or an increase in absenteeism on previously agreed upon meeting times, as a lack of in-person meeting is less personal and thus also less obligation may be felt on the part of the participant (Deakin & Wakefield, 2013).

Data analysis

Using a constant comparative data analysis approach, data were analyzed immediately upon commencing the interviews. The early analysis helped inform further data collection (Charmaz, 2015). This study aligns itself more with the constructivist grounded theory concepts. In particular, the researcher entered the study with a sense of knowledge pertaining to the subject to be studied, and that the subjectivity of both the researcher and the research participants was important in answering the research question that was posed (Charmaz, 2015; Thorne, 2016, p. 82). The researcher was guided by *a priori* knowledge obtained through conducting the literature review and through prior clinical experiences. Constructivist grounded theory also contends that the analysis of the data is an interpretive construction rather than merely existing in the data (Charmaz, 2015), positioning itself well with interpretive description which indicates there are no “facts” as there are “constructed truths” (Thorne, 2004, p. 6). Where interpretive description diverges from grounded theory is in the construction of a theory, where interpretive description does not seek to theorize, but rather “produce knowledge of a form that could be of any direct or applied use” (Thorne, 2016, p. 36).

Once the data had been collected, the interviews were transcribed verbatim by the researcher so as to immerse oneself in the information. The scripts were then coded and gathered into themes or components through constant comparative analysis. As described by Glaser (1965), constant comparative analysis is a method of simultaneously coding and analysis to generate a developed product that has an integrated and consistent representation of the data (Glaser, 1965). Constructivist grounded theorists study the data and ask “What is going on here” (Charmaz, 2015, p. 405) much like interpretive description which “extends beyond mere description and in to the domain of ‘so what’” (Thorne, 2016, p.36). Both frameworks contend that analysis is an iterative process, and that the more general is favored in the earlier stages than is precision (Thorne, 2004, Charmaz, 2015). However, unlike grounded theory, interpretive description is an approach to producing disciplinary knowledge that is between “objective neutrality and abject theorizing” (Thorne, 2016, p. 29) where it seeks to move away from theorizing to becoming a real-world applicable product (Thorne, 2016). Interpretive description seeks to not only describe a phenomenon, but to generate new insights. It is an open and exploratory process which seeks to confirm, test and expand on the knowledge that has been determined prior to entering the field (Thorne, 2016). It is not a list of isolated themes but a product that peers and colleagues can relate (Hunt, 2009) and for that constant comparative analysis will suit this current study well to allow the researcher to move beyond mere description of a phenomenon (Thorne, 2016). It produced a product that will serve to inform various stakeholders who could benefit from this knowledge, such as policy makers, administrators, educators and physiotherapists. By gaining insight to what hospital physiotherapists may see as their role, as barriers to becoming integrated

on an oncology unit, and as facilitators that have in the past, or may in the future, assist with becoming integrated, a more holistic approach to cancer care may be provided for the person living with cancer.

Rigor

Along with considering each component described above, other elements must be considered on the outset to ensure a rigorous study, a component which is reflective of a sound qualitative study (Creswell & Poth, 2018). Interpretive description requires going beyond simply collecting and reporting data. It requires an analytic process that weaves in and out of the data, using inductive reasoning to produce an interpretation that is new and meaningful. Indeed, the analytical process may be the most important aspect in producing a coherent, auditable and credible product (Thorne et al., 2004). Data were analyzed by the primary researcher, as well as the supervisor, and consensus on categories and themes were arrived at together. This increases the dependability of the study at hand, as the decisions arrived at by the first coder are duplicated by the second coder, resulting in inter-coder reliability (Morse, 2015).

Peer review and debriefing was employed to remain close to the proposed study question and data obtained. Because interpretive description acknowledges the researcher's influence, an audit trail was maintained, with the author maintaining a journal to record settings, nonverbal behaviours and otherwise intangible influences occurring during the interview process, as well as any reflections post-interview held by the researcher. The journal was further used during the analysis of the data so as to provide a record of potential influences while interpretation is occurring (Thorne, 1997).

Interpretive description can be said to be based on a few philosophical underpinnings:

1. There are multiple realities that can be constructed, indicating the importance of context, that reality is complex and subjectivity cannot be ignored
2. The inquirer and subject co-create reality, they are essentially inseparable
3. There is no *a priori* theory that can account for the multiple realities that exist, rather theory must emerge and be grounded in the data (Thorne et al., 2004).

In this sense, interpretive description acknowledges disciplinary biases and commitments, allowing the data to inform the question being posed and allowing biases to be drawn out and thoroughly examined as a means of producing a trustworthy product (Hunt, 2009).

For instance, disciplinary perspectives actually will influence how one “sees” or “reads” a situation. By reflecting on these biases, one can go beyond and then look for the “unseen” and creating a more holistic reality (Hunt, 2009). The use of a critically reflective journal during and after interviews, as well as during the analytical process, allows to identify biases that will be inevitably present. A reflective journal serves to provide transparency in the research process. It allows for a place for methodological strategies to be scrutinized, is a place to examine to what extent bias is occurring and a place where research goals can be considered (Ortlipp, 2008). It was thus a place where this researcher wrote incidences that may have occurred during interviews, environmental factors that may have influenced responses and how the analysis of responses was developed.

In the final written report, direct quotes were used to both demonstrate how the themes were arrived at, as well as honor the voices of the participants. These components assist in producing a credible, rigorous product (Creswell & Poth, 2018).

Placement of researcher

Unlike some other qualitative methods which seek to bracket preconceptions, interpretive description is very aware of studies being guided by previously found knowledge and experience the researcher may have by having completed a literature review and/or in their personal clinical experience (Thorne, 2016). This can be seen as an advantage in that the researcher may have the ability to assist in appropriately locating the most suitable research question to be posed in order to advance the disciplinary knowledge (Thorne, 2016). As indicated earlier, I have experience working in cancer care; however, I am also interested in speaking with colleagues on their experiences in an effort to understand what others see as benefits or challenges in providing this care. In speaking with colleagues informally, it has come to my attention there are many other physiotherapists who still are not aware that they are able to become valuable members of such a rewarding team, which led to forming the current research study question in an effort to identify why there are gaps in this service and how to further the implementation of physical rehabilitation and physiotherapy in cancer care. I kept a detailed account to remind myself of what my position was upon entering the field and how it was changing as I gathered data from other practicing physiotherapists.

Ethics

Ethical considerations were arrived at through the completion of an ethics review with the University of New Brunswick. The Tri Council Policy of Canada serves to ensure studies are conducted while adhering to 3 principles it has identified: respect for persons, concern for welfare and justice. Informed consent is an integral part of respecting persons, and to achieve this, providing enough information to the participant must occur (Canadian Institutes of Health Research, 2014). Informed consent is an integral part of any study involving human subjects. It serves to respect one's autonomy, by allowing people to decide of their own accord whether or not they would like to participate in the study they are being approached to participate in (Dickert, et al., 2017). It has been further suggested that informed consent not only serves to protect autonomy, but also to provide transparency, integrity and trustworthiness of the study being suggested (Dickert, et al., 2017). It is a part of meeting the Tri Council Policy requirements and although there are exceptions, where partial disclosure is an important way of answering a research question (Canadian Institutes of Health Research, 2014), this current study provided full disclosure of its intended purpose to the prospective participants. The participants were provided with a consent form and interview script to describe how the interview would be carried out prior to commencing the interview. Time for questions prior to signing the consent form was given (Appendix IV).

The Tri Council policy of Canada serves to extend the protections of privacy accorded to Canadians in the Canadian Constitution (Canadian Institutes of Health Research, 2014). Within this, it holds strongly the notions of privacy, confidentiality and security. Indeed, these must be protected, and a potential participant is likely considering their willingness to participate if these rights are not safeguarded (Couper, Singer,

Conrad, & Groves, 2008). All data obtained through the interviews will be stored in a password protected file with the researcher for 7 years via the University of New Brunswick's virtual protected network. Interview scripts and demographic profiles were labeled using pseudonyms. The pseudonyms were used to identify participants and original names will only be known to the researcher.

Perceptions of harm as a result of risk of disclosure, sensitivity of topic and confidentiality may have been part of the risk/benefit analysis participants calculated when agreeing to participate; however, when examined individually, the sensitivity of the subject matter being disclosed was more closely linked to decreased willingness to participate than the other two variables (Couper, Singer, Conrad, & Groves, 2008). This study's subject matter, although important, is not particularly sensitive and thus it was possible to garner trust from participants. Participants were not placed under any adverse effects by completing the interviews and were provided with an opportunity to comment immediately upon completing the interview. However, discussing issues related to cancer could be distressing. As such, a distress protocol had been developed but was not used. As outlined, there may be verbal and non-verbal cues that would indicate distress but none were observed (Appendix V).

Chapter Summary

This chapter outlines how the study was carried out. It used interpretive description as its methodological framework, in an effort to examine New Brunswick physiotherapists' perspectives in providing care to those living with cancer and bringing

these forth into an applied format in an effort to understand how to better integrate these services.

Purposeful sampling of physiotherapists who have been involved with those living with cancer was employed so as to capture information from those who have already been involved in this care. However, an overlooked aspect in the literature is those who have not worked on an oncology unit, as such these were included in this study so as to best capture a wide range of barriers and enablers.

Semi-structured interviews were conducted via Zoom. Constant comparative data analysis occurred in an effort to best inform the content of the interviews as authentic and to reflect the perspectives of those participating. Rigor was respected by having the primary researcher and the supervisor analyze the data, requiring a consensus be reached on codes and themes. Peer review and debriefing assisted in this endeavour. An audit trail was documented with the assistance of a reflective journal, set to capture nuances of interviews and its setting.

An ethical review was completed through the University of New Brunswick's Ethics Review Board, in adherence to Tri-Council Policy of Canada recommendations. This study posed minimal risk to participants; however, a distress protocol was in place to ensure participants' safety.

Chapter 5: Results

In this study, the researcher examined physiotherapists' perspectives on providing care to those living with cancer by interviewing eight physiotherapists who work in two different cities in New Brunswick. The interviews were conducted between February and April of 2021. In this section, the researcher presents results from the individual interviews. First, the researcher presents demographic information followed by narrative findings that are organized by themes.

Demographical information was gathered before beginning the interviews. The process involved asking participants to complete a set of demographic questions (See Appendix II). All physiotherapists were female, English and had an average of 21 years since graduation (between 11 and 29 years). All participants apart from two had been exclusively working in New Brunswick, with those two having some work experience in British Columbia and Australia. Four physiotherapists had some experience on an oncology dedicated unit, while the other four had experiences with those with cancer in a variety of settings.

All interviews were conducted virtually via Zoom. The audio was recorded and transcribed verbatim. A constant comparative analysis approach was taken to code the transcriptions into the domains as outlined by the Theoretical Domains Framework (Atkins et al., 2017). NVivo was used as a means of organizing data into appropriate codes (QSR-NVivo version 1.5, 2021). The following will include the findings of the predominant themes to have emerged from these discussions.

Domains (Themes)

The interview discussions revolving around physical activity and physiotherapy and how they can be better incorporated into cancer care were completed with physiotherapists who have experience on an oncology service, as well as those who have interacted with those living with cancer but have not necessarily worked on an oncology specific unit. Below will be the perspective these physiotherapists had with their responses grouped into domains (themes) as outlined by the Theoretical Domains Framework (Atkins et al., 2017). Participants' names have been changed to ensure confidentiality. Overall, physiotherapists felt the profession and skill set one has as a physiotherapist could be expanded into cancer care and felt that it is currently lacking in New Brunswick.

Environmental Context and Resources:

Physiotherapists

The environmental context and resources domain involves describing how a physiotherapist comes to be involved in providing care to someone living with cancer. It is the domain that describes “how the system works”. More specifically, in the context of publicly funded services, those living with cancer access physiotherapy services when another healthcare professional (such as a physician) refers them to a physiotherapist. As such, these other team members should understand how a physiotherapist can assist so

that they may either facilitate or impede the incorporation of this service into the cancer journey. Furthermore, the resources aspect of this domain describes both how many physiotherapists are on staff on any given site, as well as to how their division of care across the public system is distributed, ultimately impacting whether they are involved in cancer care or not.

The referral process

In this study, participants spoke of services that were located in the hospital, the Extra Mural program and one program carried out at a local gym but funded primarily through the Regional Health Authority (RHA). These services were, at times, offered on an outpatient basis, either directly in the hospital, and or in the aforementioned local gym. Participants described the referral process. In their narration, they mentioned that referrals for a patient to be seen by a physiotherapist could be generated by a variety of team members, ranging from doctors, nurses, occupational therapists and others. Patients could also advocate for themselves and ask for a referral from those disciplines to see a physiotherapist.

Physiotherapists who worked on a variety of inpatient hospital units that are not necessarily dedicated to oncology, indicated they would get referrals to see patients with cancer, not as a direct result of a cancer diagnosis but more so related to the sequelae. The type of side-effect would impact whether a referral was generated or not. For instance, they spoke of how someone might receive an amputation as a result of cancer, or have a glioblastoma removed. These conditions would generate a referral to a physiotherapist to help the person post-op. The physiotherapists indicated these were conditions where

members on the team were aware that physiotherapy would help and a consult was usually completed.

The challenge came where someone might be admitted for other sequelae, such as low platelets, and thus generating a physiotherapy referral in this context might not be first and foremost in other professionals' minds. For instance, in one of the interviews, when I asked the participant whether most patients with cancer are examined by a physiotherapist, her response was that routine examination was not usually the case. However, patients would be evaluated when their condition was critical:

***Interviewer:** Do you think most people with cancer are seen by a physio while in hospital?*

***Beth:** I think, well not all. [long pause]. And are they seen by them for that education component, no. They are only seen by them when things are not under control and then they are not able to move and then they're seen [for] a small snippet. It might be to give them a walker and to make sure they can climb stairs and send them home. Yeah, it's definitely probably not the best but if they're in a disaster you know they're seen, which is a lot of what we see lately honestly.*

In situations where other professionals who could initiate referrals are not aware of physiotherapy and what their addition to this condition could offer, a referral may not be generated. For instance, one of the participants elaborated how a referral could be missed if the physician was unaware of the need for physiotherapy. She stated:

If the physio doesn't get the referral for the patient with cancer because the doctor doesn't know, how do they know that the patient is even in the hospital with cancer? There has to be a way where it's a team effort. (Joan)

While the need for referrals continues to exist, one physiotherapist indicated the problem could be mitigated by being present for team rounds, where patients are discussed. In those discussions, the physiotherapist can advocate to be a part of someone's care:

One week we have rounds and that's an opportunity where nurses might be talking about a patient and we can actually step up and say, "well have you thought about physio for this?" Then the palliative care doctor can then say, "well let's get physio in," or nursing will say, "I hadn't actually thought of that." So we have avenues that we can be involved. (Isabella).

Lack of physiotherapy services in oncology

Definitely having physiotherapists as a part of the team can be helpful; however, the participants felt the challenge remains that not all units have a regular physiotherapist as a part of their team. As such, some physiotherapists have taken this on as a personal mission to become more integrated into cancer care. One such example was described by a participant who was developing an outpatient, multi-disciplinary cancer program, which is actually the first one in the Maritimes and was in a city in New Brunswick. It began after an oncology unit underwent the accreditation process. Within the process, it was identified that a lack of follow up services existed for those living with cancer. An oncologist then recruited team members to develop such a program. They had identified wanting a nurse and physiotherapist to lead it; however, funding was provided by the regional health authority for the nurse, but not the physiotherapist. This led to asking

community/private practice physiotherapists if they were interested in getting involved. Initially several physiotherapists expressed interest, but soon withdrew their names once they found out funding would need to be self-generated, leaving just 2 who were interested as described by this participant. She mentioned how they volunteered and raised money to support their involvement with the team.

The oncologist talked to [RHA] and they got funding for the nursing coordinator but they wouldn't fund the physio positions. But you can't have a program with the nurse and not with the physio. All our planning stages was volunteer work. Like the other physio and I, all the planning was volunteer....Then we got some grant money I think it was from [local funding agency], and fund raising, so we got some money there. I think Relay for Life had given us some money. It was all private donations. We were doing fundraisers, like they had a comedy night at a pub and we would work at a Saturday market, like it was just like all fund raising 'cause they wouldn't fund the physio positions. So that's how it got started. It's just been rolling along ever since.

(Amie)

This personal dedication is commendable and in this case, a positive result occurred. The physiotherapy program continues more than 5 years later, and funding is not as challenging, as described by another participant who is now responsible for it:

*I do the [name of program] that is run by [RHA] initiative in conjunction with the [private gym]. So I'm a physio with that. There's a nurse also so we run that. It is not specific to breast cancer that's any cancer diagnosis and we run that out of the [private gym] twice a week. **(Hallie)***

However, this was not the case for an inpatient unit in another city. The physiotherapy department had identified an unmet need in hospital care and wanted to change it. They had realized that if they saw mastectomy patients pre-op, they could potentially decrease the negative sequelae that occurs after surgery. The physiotherapy manager was supportive of this decision and as such, the manager and outpatient physiotherapist (in hospital) who saw those with post-mastectomy conditions met with surgeons to educate them on the importance of physiotherapy and the contributions they could make in this population earlier on in the journey but they were met with resistance.

Kate: *We would like to see them all pre-op preventatively, they do that in the other two*

bigger cities in New Brunswick but we don't do that here.

Interviewer: *Any thoughts why?*

Kate: *Yeah the surgeon, in general. She does not feel that it's required and the other*

surgeons just follow. I've had meetings with them and yeah she did not wanna do that.

Interviewer: *So you've approached them?*

Kate: *Hmm, hmm [yes], this was quite a long time ago, going back ten years or more.*

Yeah we had meetings and she just did not want, she thought it would clog up the system. And we were happy to do it and she didn't.

Interviewer: So it was thought it would clog up the physio system?

Kate: Hmmm [yes], she thought it would be too much for us even though we were the

ones who said we'd do it.

Interviewer So do you interact with her at all now?

Kate: Not really, just referrals and discharge summaries back and forth. That would be

it. I don't see her in person.

As discussed previously, without a referral, patients will not be seen by a physiotherapist. As such patients are not being seen in this one city of New Brunswick, compared to how they are being seen for the same condition in other cities all because a physician felt it was not necessary. Another physiotherapist at the same site where patients are not referred to physiotherapists indicated that negative effects further down the journey can occur for the person living with cancer and are more time consuming to reverse and thus incorporating physiotherapy care at an earlier point could prevent difficult situations:

I think in the past they've asked to see the surgeon saying they want to see if they can refer more people to physio. Their response was they don't need to overload the system. I feel if you get someone to come they just need to come 30 minutes every couple weeks, it's less overload than if you wait until they can barely move their arm and they have to come a lot more. (Lily)

Being involved preventatively

Over and over again, all the physiotherapists indicated how they are under tight budget constraints, having a difficult time managing caseloads and doing quality work. Indeed, having physiotherapists present earlier in the continuum of cancer, at the moment of diagnosis, was something supported by all physiotherapists who were interviewed. They agreed it can be an overwhelming time, being sent to many different professionals, all of whom are providing information and perhaps the least amount of attention is placed on one's physical status. However, they also indicated this could not only be a moment to empower the patient, but a moment to help the patient get through their interventions as best as possible. For instance, Hallie, described what their interaction with the patient pre-op usually looks like. She described the information and assessments that are carried out with the patient. In her narration, she emphasized the significance of the pre-op assessments as baseline and referent points:

So we have a physio breast health booklet that we created so we give them that pre op. We tell them what to expect like sensory changes and things like that and activity guidelines, restrictions that they'll have post op. We tell all of them that we're seeing them pre op so that we can have a baseline of what their normal is. So we'll measure whatever side...so if it's a left mastectomy will do their left shoulder range of motion so that we know what is pre op and will do their left arm circumference is so that we know what it is pre-op so we'll know if lymphoedema is an issue post-op as well. We have all their pre op baseline measures so we compare them to later and so we'll know when they're back to their normal or will know if their circumference measurements deviate from their normal. (Hallie)

She elaborates on the exercises and activity recommendations they make to those being seen pre-op for surgery related to breast cancer and says:

I think that's why we start with small so you're not overloading them 'cause they've already got enough. I think in that point in time when so many things are out of their control it's something that they can control. I think that helps too because if they can't control their diagnosis and they can't control if they have chemo but they can control if they can do this exercise everyday. I think it gives them back something that they can do when there's not a lot that they can do to help themselves so at least this is something.

Differences noted from other jurisdictions

Interestingly, only 2 physiotherapists had indicated they had worked outside the province, but this did not mean the others were unaware of how other jurisdictions were involved in cancer care. For Amie, who was involved in developing the first outpatient multi-disciplinary cancer program in the Maritimes, she travelled to other provinces and consulted heavily during the development of the program. However, local context needed to be first and foremost when adapting what worked in other places, as New Brunswick's relatively small size and its difference in economic standing would not accommodate for some of the things other places were doing. For instance, fund raising strategies were different. She mentioned:

We spent a weekend up there just to kind of observe their program and kind of pull some information from that. It was all privately funded but it was a different

type of private funding. You know, they would have these Dinners of Diamonds and it was like \$5000 a ticket which is not gonna fly in New Brunswick. That's just not even possible [chuckles]. (Amie)

Even how they ran their programs was not feasible to carry out here in New Brunswick's smaller population base:

We looked at programs that did exercise classes like in Alberta for example. They would have prostate cancer, and they would have eight different classes a week that someone with prostate cancer would go to but we just don't have the population base here to do that. So we started with breast cancer that's what we had funding for, it was breast cancer people we started with. In this city we did have a bit of a wait list at the beginning but once we got caught up it was almost like they weren't coming in fast enough to fill the program. We were getting really good results so we extended it to include all cancers so that's how we moved forward. (Amie)

Preventative measures are addressed differently in other provinces. For Kate, she works in the hospital's outpatient department and sees those who have had mastectomies, prostatectomies, those who have had pelvic radiation, among other conditions, and have complications from these and their interventions. She was asked if she, or anyone in the hospital, saw any men who were going for their surgeries pre-op:

Pre op? Not generally. Now I did see, if any of the prostatectomy's are going to Quebec to have their surgery, the surgeons there require that they have a physio before their appointment just because they are more advanced in their pelvic

health than we are here so I did see two gentlemen that had to see me before they would have their surgery. That was because they were going to Quebec. (Kate)

Environmental Context:

Cancer

Interestingly, the question of how physiotherapists fit into the context of cancer care was first and foremost a point of discussion in this study. However, what became apparent is a discussion on how cancer care fits into the context of the health care system in New Brunswick. In participants' discussions, they described the environmental context in terms of the geographical space, cancer diagnosis, and the type of cancer, such as brain tumors or breast cancer. Concerning the geographical space, for instance, in New Brunswick, it is possible for a hospital to not have a unit dedicated solely to oncology services. Even palliative care, a service associated with end-of-life oncology care, is blended with general medicine in some hospitals in New Brunswick. As such, the environmental context of geographical space and how those living with cancer are treated in New Brunswick became a point of discussion by participants.

Geographical Space: cancer as a diagnosis versus cancer as a sequelae

The lack of a geographical space dedicated to oncology services was discussed in terms of how the nuances of a cancer diagnosis might not be first and foremost in one's mind. As this physiotherapist indicated, the actual thought of a tumor being synonymous with cancer was not necessarily a consideration:

I worked on family medicine and then I moved onto neurosciences. Especially in the neurosciences unit we would have patients who were coming in to have brain

tumors removed or resected, like a glioblastoma pops into my mind. Having given it some thought after I first signed up for this study, I realized that we didn't really think of them as having cancer [chuckles]. We just kind of said you have a glioblastoma come in and we're going to help you after you have it removed. I didn't really put much emphasis on the cancer part of it, just more the post-surgical and get them up and going and get them home as best as you could.

(Melanie)

In this context, cancer in and of itself might get lost in journey, depending on what unit they might be on. When someone was on an oncology specific unit, and a highly specialized one such as palliative care, the diagnosis is first and foremost in one's mind and seems to impact how things are carried out:

I mean, on the neuro unit, you feel like it's, like there's more going on, there's more people around to help you if you need it, where as on palliative it's a lot quieter. You smelled cookies and flowers on the floor and it's more like, less hustle and bustle. You kind of feel like you just have to slip in and sort of see the person and slip back out and not disturb anyone too much or anything. (Melanie)

Others also indicated that someone who had cancer but was admitted to hospital for another issue, their cancer diagnosis and its implications might not be first and foremost in one's assessment and treatment:

It depends on the situation but sometimes if it's not necessarily why they're there, it's something that I write down on my list of their medical history, but it's not something that's always at the forefront. Unless their symptoms are making me worried that they have mets. I would take it into account if I was thinking that

their pain is too out of control and it doesn't make sense or if something that I'm seeing in my assessment doesn't make sense, like their back pain is far beyond what it should be and they had prostate cancer. Then I'm usually a little worried about that. I'd say sometimes it's not, it's not on the list of things that really are in my mind from day to day. (Beth)

Types of cancer: are they important to differentiate?

Some physiotherapists acknowledged the importance of treating cancer for its uniqueness, both as a whole “cancer diagnosis” or further broken down into a “specific cancer type”. For instance, Hallie spoke of how those who have breast cancer receive their care in a highly formatted and structured program from the moment of diagnosis in one particular city in New Brunswick. They have a breast cancer navigator who assists patients in their journey throughout the continuum. It was vacant between August and January, and patient experiences were notably impacted:

Interviewer: *You mentioned how patients say it's fast and obviously there's a lot going on. How do you find it is received that a physio is coming to see them at that time [of diagnosis] 'cause there's so much?*

Hallie: *I always open with “do you know why you're coming to see me?” and they often do because the breast health navigator has already kind of explained the different pathways that they're going to have to go to so I think now that the position is filled again they have a better idea of*

why they're coming. 'Cause when it was open they had a lot of questions.

She elaborates with:

I know even when our breast health navigator position was empty, I had a lady come in that was asking questions: like she really thought she was going to have a mastectomy under local anesthetic. So that gap was missing, She had no idea it would be a general anesthetic, but that one person's role became very obvious in just knowing and talking it through. The fact that you get so much overwhelming information, you need somebody to help you process that through. I don't know why it doesn't work the same for other oncologies, you really wish it would.

I'd love to see other navigator positions put into other oncology positions. Generally that's been a nurse, and it could be anybody but somebody who could help somebody navigate and explain their results when they didn't understand it the first time and help them navigate it because I think that alone, whatever the condition, if they had one person they could contact, they would need consistency like they need that one person they can kind of develop that relationship and kind of call and feel better about.

They're trying to standardize that all across the province but they're going to need the same team to make that happen. I know another city in NB is taking some steps towards that from some of the things I have seen and questions I have fielded. I think some regions are attempting to try and copy that and I hope it does. I think from the patient's perspective and especially when you see them down the road, they

will talk about how well they feel that everything has run in a really hard time. And I think that's what anybody should come out of any program. You should be made to feel that things were made as easy as they should be in a hard time.

A lack of coordinated cancer care is of concern for those who have any type of cancer diagnosis and can lead to confusion on the patient's part. Having services present for one type of cancer and not for others could be creating gaps in cancer care in New Brunswick.

Social influences

Most definitely, the environmental context one works in is heavily influenced by the team members, administrators, policy makers and others. These social influences may impact whether physiotherapy care is incorporated into the cancer continuum. This domain thus incorporates participants' perspectives of how various team members may impact whether a physiotherapist comes to be involved in cancer care or not because of how they may or may not view the need for this type of care as being important. It involves trying to understand who are advocates for increasing the role of physiotherapy and the inclusion of physical activity in general. The following is how physiotherapists indicated they felt other health professionals, patients and even other physiotherapists view the role of physiotherapy and activity along the cancer care continuum.

How others see physiotherapy and cancer care

All physiotherapists discussed instances where other health professionals were not aware of all of the skills a physiotherapist has in particular to oncology and those living with cancer. They spoke of how, even after being on teams for a while, or working alongside other professionals, those people still were not fully aware of what

physiotherapists could do. For instance, generally a physician is seen as the leader of the team, but their knowledge of physiotherapy may be limited:

Interviewer *Are you aware of even what the oncologist's perception of physio is?*

Amie: *I don't think she had any idea honestly [chuckles]. Even when the program was up and running, I don't think she knew, like I know she knew we ran the program twice a week. We explained to her that it is exercise classes.*

Kate had been working on an outpatient basis, in the hospital, with those with cancer for about 15 years, but her presence was still not acknowledged, nor what physiotherapy's role was in cancer care unless the patients were in the post surgical stage or had developed complications. She stated:

I don't think most people know I'm there for the pelvic floor part. The lymphoedema is sort of progressing, they're starting to know that myself and the other physio are there. Post-mastectomies, the surgeons certainly know we're there and the oncologists know we're there but they tend to wait until they've had problems. Or we see them post op only if they've had an axillary dissection.

How other physiotherapists see their role in cancer care

This lack of understanding was not just for those outside of the profession, but other physiotherapists also did not seem to understand the roles of their colleagues and the skills they possessed. For instance, Isabella had been involved in the care of a patient at a nursing home who was unable to ambulate as a result of cancer lesions in her pelvis. After many months of therapy, the patient was able to take some steps with a walker,

something she hadn't done in years. Describing her interactions with colleagues, Isabella said:

I talked to my colleagues at work, they said we wouldn't have touched that. And I said "Why not? You know, she's moving, she has informed consent, the oncologist is on board. She's now walking, she's going to family and friends. She's gone to the shopping mall more independently. Her world has opened up. She went to dinner at a restaurant for the first time in four years." To me that was huge quality of life.

Lily, who has worked with an outpatient cancer program, as well as seeing patients in the hospital outpatient department who have complications resulting from cancer or its interventions said:

I feel like most of the physios that I work with, if they see someone who has cancer they're probably seeing them for shoulder pain but they don't really....Maybe I feel like physio needs to continue to evolve to try and help more in a health promotion kind of way than just fixing. And it is getting better, but I do think a lot of people that I work with, no one wants to see people with a mastectomy they get really intimidated by that or that they have a metastatic disease. But I think if they knew somebody had ovarian cancer or something and they came for their shoulder, they would just be treating their shoulder and not maybe saying all you should exercise and talk about recommendations of exercise in the benefits and all those sort of things.

This would seem there is a missed opportunity for physiotherapists to play an active role as they can in promoting the importance of physical activity and the full scope

of skills they have in their possession. This is where, if physiotherapy were a standard of care, it could then be thought of more often by many more involved, including physiotherapists:

I think that if it's expected and if it becomes the norm, and patients know I'm going to get physio, I think it would help their self esteem. (Joan)

Support systems for physiotherapy and cancer care

Despite the limited understanding, there were areas of positivity, where physiotherapists felt supported by management and their fellow team members.

Interviewer: *How do you find your support around, like supervisors, managers that sort of thing in terms of managing caseloads. for funding for education or all of those things?*

Kate: *Excellent. As I say I just took two big courses. No, my managers are very supportive of the education component, that's not a problem. And in terms of time frames, I get longer with these patients than I would if it's like a hand injury. That's been very well supported as well by management. I feel very supported that way.*

Having positive outcomes occur as a result of physiotherapy interventions was also seen as a way of gaining more support from other team members. Isabella described the support from staff at the nursing home where she assisted the person living with cancer who had pelvic lesions:

Isabella: *It was really good. I had an assistant that was able to buy in and she was really good at supporting. So if I was to go in once or*

twice a week and check in and progress things, then the rehab assistant was carrying the program out on a daily basis. that really made a big difference is having the staff on board.

Interviewer: *Any issues with nursing staff, either positive or negative?*

Isabella: *They were quite receptive and quite shocked because nobody kind of expected this was where things were going to go. I thought it was quite well received. She still hasn't moved out of that facility and I think that there's other reasons, but her plan is to move.*

Perhaps an overlooked, and yet obvious, group who should be involved in advocating to expand the role of physiotherapy in cancer care are those living with cancer themselves. The participants discussed how important these people were in promoting the advantages to having physiotherapy involved, or even the perceived contribution they could have:

You need one individual and maybe it's not the physio, maybe it's somebody who's had cancer who's in that...I hate to say it but maybe it's a stakeholder who realizes the benefits because it touches them close to home, I hate to say. That's how things happen. Maybe someone in their family gets cancer and they realize "whoa there's nothing here for us", then they have the ability to push it because they have the power. And I think a lot of times that's what it comes down to, it's power, it's who controls the money, it's who controls this. A physio at the bottom level can say you need to do this, but if they're trying to pay off loans and just trying to make ends meet and have a young family, they don't have the time or the mental ability to push, I don't think, for something like that. I think it's people who

have to be really passionate about it and it's unfortunately it's the people who are most affected and who have it in their family. (Joan)

For Amie, she experienced this very thing:

Really the people going through the program were our strongest advertisers. They were amazing. (Amie)

She explained how patients would receive a t-shirt after their 10th visit, and that in the planning stages, they were concerned that the patients would not want them, that wearing a t-shirt would make them visibly known as someone with cancer, but the opposite was found to happen:

They would be like “this is my ninth time can I get my T shirt now”. They were so proud. And they would mentor each other so almost like if they saw a T shirt they would be like “Ohhhh!” and go over and introduce themselves. You know they felt sort of alone [at first] and so it was really neat that way. They were our biggest advocates honestly... When they were doing fund raising some of them would speak, how much the program had changed their lives and that type of thing so they were the best advocates really to spread the word. (Amie)

How exercise/physical activity is perceived by others

Indeed, how exercise/physical activity and cancer is perceived was discussed by all participants. Everyone agreed there is a place for physiotherapy interventions from the moment of diagnosis, through to remission and palliative care, but that it did not necessarily always occur. How the message is delivered was seen to be gauged as to whom the message was being delivered to:

To me it depends on who you're talking with you have to really gauge your audience. Like if somebody has an active lifestyle to begin with, then you can use the word exercise. If the person is sedentary, or their goals and interests are very different, then I tend to use your activity level rather than exercise. So it's about choosing what message is going to the receiver. (Isabella)

Some physiotherapists felt the message also should resonate with the individual as a means of motivating them, as well as potentially ensuring it is something they will continue on with, even after they have finished their formal intervention with a physiotherapist:

Honestly it's pretty individual and try to encourage people to exercise and different ways they can do it. Everybody is a little different because the best exercise you can do is the one you're going to keep doing. We promote variety and promote exercise just in terms of improving their quality of life because people are surviving a lot longer now than they used to. Also [it's about] reducing their risk of reoccurrence and lots of other ailments as well. (Lily)

Skills

The domain of skills pertains to the techniques and approaches a physiotherapist would use to assist those living with cancer. These skills may have been acquired while in university or they may be acquired post-secondary, either through advanced courses or through experience. It differs from knowledge, a domain discussed later in this document, in that skills are applied whereas knowledge is more the evidence used to guide which skill should be used in a given situation.

Most commonly perceived skills

Certainly, the skills a physiotherapist possesses are important on what could and should be done in cancer care. Most physiotherapists, when asked what skills they have, alluded to physical activity and exercise as a big component of not only what they do, but what is perceived that they do. However, it was found to be not the only thing that can be incorporated into cancer care. As Melanie says:

I guess I think of physical activity as the first thing but I know there's a lot more to it.

More specifically, many mentioned how most other professions would commonly consult a physiotherapist to provide a walker to a person living with cancer. However, most indicated the role a physiotherapist would play would change according to where along the cancer continuum a person living with cancer might be.

Well there's lots of different areas that physio can approach [patients]. So if somebody had surgery then certainly physio can help with that. If someone had a mastectomy then physio could help with that, to help them move or more help with their scar. (Lily)

Educating others as a skill

Physiotherapists indicated they have strong skills to educate the person living with cancer and their family, especially in the initial stages. They acknowledged that this is an overwhelming time but educating the person living with cancer and family members can be empowering:

Joan: I think a lot of it is education. And it's sometimes education of the caregivers and family members on how to make the patient more comfortable when they are in those palliative stages. I think physio kinda can have a role in all stages of the person's cancer treatment right up to their death to be honest.(Joan)

Lily elaborates on this point:

Education is really important for those people [those with breast cancer] especially through the rest of their treatments. So if they're doing radiation to keep doing their exercise. We know there's always that risk of getting lymphoedema with surgery and radiation, I am trained in that as well so I treat people with lymphoedema. Education is really important so just promoting general exercise, it doesn't have to be really super complicated. Walking is really the best thing and yeah if it's a different type of cancer and they had a different surgery, it might apply for a different area.

Unfortunately, the education component could have the biggest impact, and yet seems to be the most often missed opportunity. While elaborating on the importance of education, Lily provided examples of patients who presented with limited awareness of the types of exercises they needed to perform. She mentioned situations where fellow physiotherapists were selective on the type of patients that needed care, perhaps because of limited awareness of the importance of physiotherapy for all the other patients. She mentioned:

A lot of times [patients] say "I didn't know I was supposed to keep doing exercises when I went to radiation." I don't see a lot of people right after they've had a mastectomy, there's two other physios that have been working there for a really

long time that would go see those people, but they only tend to see the ones who have axillary dissection or if they've gone to radiation. If they don't have the range of motion to get the radiation then they will send them to physio. Other than that, we don't see them and I think it's a shame because they would benefit so much even from the education. Just to show them the exercises and the education to reduce the risk of lymphoedema and what kind of exercises they could do, just those sorts of things. Anything really, not just breast cancer. People who have prostate cancer or hysterectomy or any of those things.

Furthermore, Lily provided an example of a missed opportunity for a physician to refer a patient to physiotherapy, perhaps because the physician was unaware of the need for physiotherapy. She mentioned:

I had a lady today and she had a hysterectomy and she asked her surgeon right out "do you think it would be a good idea for me to go to physio after my surgery" and she said "oh you don't need physio, just gradually do what you do and you'll feel fine." I mean she wanted it so why not refer them.

Assisting with sequelae

Symptom management was discussed by several participants, indicating that physiotherapy could manage issues that arise as a result of cancer, or the interventions used to combat it:

Well I think we should be playing more of an active role during the active phase of treatment. It would help with symptom management. You know, if you're on chemo it doesn't mean you shouldn't be exercising or that you shouldn't be

moving. I think that should be a part of, we should be developing programs for people during that acute phase to help them. We know exercise does make a positive impact but we're not doing that, we're waiting until they're all finished and they've got ankle contractures or they've got vincristine myopathy or you know we should be helping monitor. (Isabella)

And as Kate says:

I would like to see an actual program where we work right in oncology and that would be my only role would be oncology. I think because when they are receiving their treatments, exercise has been shown to improve the effectiveness and reduce the side effects of their chemo so we could be right in there, right while they are upstairs getting those treatments we could be right there. And preventatively, before surgeries, with lots of education and showing them what they need to do beforehand, so we're missing some big pieces.

Listening as a skill

More than having the skillset to prevent conditions further down the line, participants indicated that great physiotherapists have strong listening skills and really work with the person who has cancer to create a treatment plan that aligns with what the person wants, not what the physiotherapist wants.

I think honestly having [physiotherapists] who have good interview skills is important because the patient sometimes tells you everything you need to know. That being said, I think the [physiotherapist] also needs to be a good listener and you need to be able to ask the right questions then you do need to be able to focus on what that person that you're working with wants to do. I find a lot of my

patients with cancer, I really let them guide my treatment sessions. So I make sure that they know I'm here to work with them but what I need from them is to tell me what they want. And if what they want to do is to be more comfortable laying in their bed and rolling from one side to the other, and that's going to be what I work on. I'm going to make it easier for care for them to roll in bed. (Beth)

Beyond the skillsets that physiotherapists present with, Hallie reflected on how training physiotherapists in other dimensions, such as psychology, could help assist physiotherapists to fully assist the patients they interact with, given how much they are exposed to this component:

I wish that [physiotherapists] had a bit more of a psychology background for some things too because I think especially here is where I wish we had it. You feel like you're doing a lot of counseling without, like only going by experience, and saying what you see is traditional and normal and stuff but without having any formal supports for that. I do that all the time.

Being a good listener means providing quality physiotherapy care, as well as can motivate those with cancer to carry out their treatment plans by giving them something positive to focus on while they are surrounded by so much negative:

Joan: I think [it makes] people feel better and oftentimes, it's self worth. It might be that they are helping them with physical things but it helps them mentally, you know what I mean. You have somebody who can't get out of bed and you're working with them to strengthen them and get out of bed, you just increased their independence.

She continues on:

And I think a lot of it too, to be honest, is we become counselors. We become a voice because with physio, you're in so much with the patients that I think that we actually play a big role in listening. We're that constant person that has seen them from health care, 'cause they may have a different nurse every shift or they may have a different person that sees them and they see so many different people while they're in the hospital. But if you're seeing them in the hospital or if you're seeing them in extramural you're constantly going in and seeing them . You're that familiar person. Sometimes you feel like you are their counselor. Sometimes they're telling you their thoughts and feelings.

Related to this, the consistency in the physiotherapist and truly listening to what the patient's goals are results in trust:

Isabella: I think for me it's about trying to build a rapport first so that somebody can trust you and having consistency in your therapist too makes a difference. Like I know I can go in with somebody that I've built some trust with.

Social/professional role and identity

The domain of social/professional role and identity is related to both the scope and breadth of physiotherapy practice, as well as the boundaries and limitations to one's practice. Many participants spoke of the boundaries of the profession. Listening and assisting could be seen as assisting one's mental health while coping with cancer and was identified as a positive from participating in physiotherapy. They also noted their limitations in this aspect in that it is not a physiotherapists' role to be a counsellor per se.

Knowing the scope of one's practice

Furthermore, they were aware of contraindications to physiotherapy interventions, or the times they should not be involved in one's care. This is demonstrated in the following. Isabella was assisting a person who has cancer who was in a home and wanted to walk again. She examined the patient's medical information and did not want to take chances. As a result, she consulted with the oncologist prior to carrying out her proposed treatment plan:

I think it's understanding medically what's going on with the individual. I wouldn't have wanted, like if her bones were at risk of collapsing from weight bearing, I would not have wanted to put her on her feet. I looked at the X Ray and I didn't have a clear enough understanding and I was reading the report and thinking "yeah I think this is what it means but I'm going to check to cover my butt to make sure that I'm not putting the patient at risk before I do anything".

Furthermore, communicating with that oncologist for the duration of the treatment plan, at various intervals, was important in ensuring the patient's safety throughout the duration of treatment, as well as continuing to involve the oncologist in the plan of care as a way of continuing communication with all team members:

I said look, this is the patient's identified goals, this is what I'm considering offering her. I asked "what are your feelings, do you see any contraindications? Do you have any objections to this plan?" And she said go for it. She said "would love to see her to have the opportunity." I sent the oncologist regular updates on a regular basis saying, you know she's able to stand 10 minutes at a time in the standing frame. Or, we've got now an appointment, we've improved

range of motion but we're blocked at this point. Rather than putting her through casting we're going to have an AFO made for stability to take the ankle out of the equation. She said "Go head" and wrote the prescription for me. Everything was quite well supported because I think we had a good enough relationship.

Physiotherapists and ability to provide exercise as an intervention

As for whom should be responsible for delivering physical activity and exercise as an intervention to those living with cancer, most participants agreed that physiotherapists are well suited to carry out these treatment plans, but that often limited resources keep them from doing so. As such, other professionals are involved in carrying out the treatment plan, with physiotherapists overseeing the overall progression.

I don't think it necessarily has to be a physio although I do think a physio should oversee the program. So they might have more of a role coordinating and assessing and watching the progress of the patients. It may be that they only see the patient every once or two weeks and then relying on somebody else to feed them back the information when changes need to be made or things like that.

Because I just don't think there's enough money and enough [physiotherapists] to do one on one. (Joan)

Given health care in general has limited funds, the likelihood of adding enough money to make a difference and add more physiotherapists to a hospital caseload is very small. Also, by increasing a physiotherapy presence in oncology, it likely means it will decrease the presence on already established services. The funding models are complex

and vary by region in the regional health authority and no service is likely to welcome cuts, even if it means an addition to an area that is lacking. Hallie, however, feels there is a possible solution in re-imagining the allocation of physiotherapists:

Physio is not utilized to physios' capability in a hospital. I think if there was a realignment of what physio's true role were, there would be enough bodies for that. It doesn't need to be a physio on an inpatient unit that takes somebody for a walk, that could be designated to somebody else to do that and have the physio to come in for the assessment and what needs to be done like a consult. We've talked about that where having physio as a consultant where you can come in and step in and see what needs to be done and you delegate that to somebody else to do. It would free up more time to be able to do things like that. I think it's doable but I think it takes a whole, it would take a whole consensus and agreement and support to make that shift.

This is a certainly a promising option to explore, where physiotherapists could then find more satisfaction in their duties. As Joan indicates, even to advocate for further implementing physiotherapy on other services can be challenging in 'the real world' of health care. If a realignment were to occur, would it remove the skills physiotherapists have or build upon them:

But then they have 16 patients to see on their floor and there's not enough physios and it gets squashed, the motivation and the excitement to make a change gets squashed because they're so busy. You become what I call, I called it "dragulation therapy". People asked what I did in the hospital and I said "I'm a dragutherapist. I drag people to the chair and I drag people to bed and I said I do that all day, I don't have time to do real physio. I said I don't even get the

enjoyment of doing the exercises I have to pass that on to the assistant because I have too many assessments to do when I have too many discharges to do and I'm taking people up and down stairs and I'm doing such routine stuff that I don't actually get to know the people and actually care and do the one on one."

Unfortunately, environmental context and limited resources in health care in general seems to impact one's sense of professional identity and the role they play in cancer care. Even having the time to advocate for an expanded role in this service might be limited by time constraints and limited resources.

Knowledge

In many ways, the knowledge a physiotherapist carries pertaining to their role and their skills sets the tone for approaching cancer care. This knowledge can be obtained from the education they receive while in university or in the years after this formal education has been completed and they enter the health care system. All participants agreed they received minimal instruction and background into cancer, the different diagnoses of cancer, the stages one might go through and the negative effects that can come as a result of the illness itself or from the interventions used to remedy it.

Improving entry-level knowledge

Discussions were conducted as to how this could be improved. Most agreed a physiotherapy degree serves to introduce students to topics and is meant to cover a wide variety of topics. Having a course dedicated to oncology would not be realistic. However most seemed to recall that the topics taught around cancer care centered mostly on the

harms a physiotherapist could do, and not the positive outcomes that can occur by participating in physiotherapy. For instance, Joan mentioned:

A lot of it might be more on the job training but I think that there should be a little more in school 'cause I don't feel I had enough. I knew what the red flags were, but I don't feel I was educated as to what physios can help with cancer. It was more about the problem not the area. So it's like this person has cancer but they are referred because they have decreased range of motion in their shoulder or this person has cancer but they are referred for orthopedic surgery. So you're working with the last minute condition that they're referred for but you're not really knowledgeable about the disease process itself. (Joan)

While participants shared what they had learned, they were asked if they felt assisting those living with cancer would be something a newly graduated professional would be prepared to deal with. Their responses varied from new graduates being prepared enough to carry things out safely, to new graduates would need more experience with more “routine” diagnoses before interacting and assisting those living with cancer adequately. Hallie spoke on what would be useful for new physiotherapists should know:

I think they should have a much better background on what the treatments are for cancers. So if they could know some of those things to look for, like looking at their blood counts, looking at what some of their prognosis might be, looking at what would be realistic, looking at what some of the, you know if somebody has mets what would be appropriate. Looking at weight bearing exercises. I think that there's more condition specific that they should know, or at least be exposed to before they're doing a lot on an oncology floor.

Perhaps Isabella had the most well-rounded response when indicating if it would be appropriate to have a new graduate working with someone with cancer versus one with years of experience:

I think there is a difference [between a new graduate and an experienced physiotherapist] but I think both can bring something to the table. You know, I think sometimes the new grads are unbiased and fresh and keen. And then I think sometimes the old dogs are able to, you know, they've had the experience and have kind of been around the park. They understand but is that a good thing or a bad thing. I think it depends on how you're using your eyes.

Preparation needed to enter cancer care

When asked about their own personal experience with commencing to see those living with cancer, physiotherapists agreed they were prepared after having a few years of experience, as well as building on the formal education they had received in school with supplemental information they had gathered either independently in an informal way (mostly researching relevant topics on their own), or through post-secondary courses.

You know basically it would just be my own knowledge on the benefits of exercise with cancer and oncology, and my degree which I would have gotten from physio school which you probably remember would not really include much. So once I expressed that interest, my managers support any course that I want to take. I've taken at least four weekend courses on oncology and physio or oncology and exercise. Most of them are geared towards more physiotherapy. They are mostly through the oncology division of the CPA. (Lily)

An often-cited resource was gaining insight and knowledge from colleagues. Participants spoke of how important it was to have informal case study sessions with colleagues, asking them if they had experience with difficult situations and how best to move forward. Further to this, Isabella commented on one might be able to do if they are working in a rural/remote area where they might be the only physiotherapist around. She has experience working overseas in this very situation and says:

So that's where I think that, having lived overseas, we had outreach groups and people could link in and communicate with different centres. So if you're living rural, then make friends with some of the people that are working less isolated and then make contacts and communicate. I think that's kind of our, I think the onus should be on us as therapists to make sure that we're not completely isolated because how do we grow.

Indeed, this might be one of the best ways forward, as formal post-secondary courses do not seem to be plentiful in the field of physiotherapy cancer care. When Amie was developing the multi-disciplinary cancer group, she found it difficult to get relevant information.

We started looking at how could we set this program up and we kind of looked at all the programs across the country and took bits and pieces from this and that. We went up to Montreal...and spent a weekend up there just to kind of observe their program and kind of pull some information from that. We had to go and do a lot of online research and pick what worked in some and pick from others.... We were always looking for other cancer rehab courses but we couldn't find any. We would have traveled to the States but there aren't any. They are few and far

between. the courses by [Canadian physiotherapist] were good to start but the rest was mostly independent.

It might appear this is a situation of “the chicken and the egg”, as elaborated by Amie:

***Interviewer:** Any thoughts as to why that gap in education exists there in the field of cancer?*

***Amie:** I think probably just 'cause there's not a lot of programs.*

Emotion

The domain of emotions was used to explore what it feels like for the physiotherapists to be involved in providing care to those who have cancer. Many spoke of how rewarding it felt to be able to assist those with cancer, but they also spoke of how easy it was to relate to that person. They indicated that this was because cancer is so common and so it is easy to empathize, as well as imagine what it would be like to be in a similar situation. They also spoke of how age can change their motivations, resulting in a different intensity of care: that those with cancer who are older, although need proper care, are viewed as having lived their lives and might receive care as usual. However, when physiotherapists interacted with younger individuals living with cancer, they felt more urgency in providing care to assist with a positive outcome. They also commented on how becoming involved in cancer care may be impeded by an element of fear.

Job satisfaction

Cancer care is a unique field to be involved in, and its emotions are quite varied. Certainly, for some participants, the reward was a big motivation to being involved in this type of care:

The difference in a couple weeks was really amazing. From the physio point of view, it was really rewarding. I think that's what drew it to me. Like I said I've owned a clinic for [several] years now so I've always worked with people in pain. That does get a little bit draining, like it does get a little bit draining. These guys, they still have pain, but their focus is just to get better. It might be to be able to mow their lawn so their wife doesn't have to do it, or to take a trip, or spend time with their grandkids, or be with their kids. They're just so much more appreciative it's so much more rewarding. (Amie)

More profoundly, Kate was asked what her experience was like working on palliative care and had this to say:

Well if the person's goal is to get home 'cause some people want to get home to pass away at home but they have to be able to get into their homes. So if I can help them do that I think that that's an honor. Some of my other people in palliative, you're giving them quality of life as much as you can right up until the end, so it's very rewarding.

Empathy

Dealing with cancer can bring on many emotions. Where it has such far reaching effects by impacting so many Canadians, either directly or through knowing friends/family who have been diagnosed with this disease, interacting with those with cancer can bring out emotions for a physiotherapist. When asked if there are emotions involved with treating someone who has cancer, Hallie says:

Maybe it's because we walk them through every phase of it. Like when they come in for pre op so many of them are like a deer in headlights. It is just such a shock because things do go really quickly. A lot of them are still just stunned. And then you go through and you see them after surgery and they're just happy because that part is done but then you see them realize how many more appointments and how much. You see the waiting because often they'll send the results to California to see if they need chemo or not. So they're waiting for those results to come back. Then when they get the news and they do have it, you know you're hoping for them that it means that they're not going to have it but when they do, you're just on that high and low roller coaster because they're coming to see you so much in between that I think it is different. I guess it's one of those things you can also put yourself in their shoes because you know the incidence is so high and it's not that it's out of the realm of possibility. Whereas for a lot of things you might feel like it's never going to happen to you but I think cancer you can't do that with. I think it's harder and taxing that way because all of that is possible. I find it much harder in that sense than a lot of the other parts that I've worked in.

Joan also says:

I think it's because it's more their story. When I know their social history and I know whether they have children or whether they're too young, or if I know them and they have family, I do feel more emotionally attached. But I'll admit, because we've been doing physio since 2000, you do tend to get, you tend to learn ways to basically put up the walls so that you don't get emotional. 'Cause I'd be crying every day honestly. I do get attached to people. I did find a way to not get so

emotionally attached that when somebody told me they had cancer I could actually put up a wall up and not get attached or be as emotional. But a lot of times once I found out if they had family or found out their story that would get me quite attached.

The impact of age

Interestingly, the client's age came up quite often in the discussion of cancer care, a response that was unprovoked by the question posed. Many felt that it changed their interactions when providing care, and that it was related to perceived age-related ability:

***Melanie:** Sometimes people, older people especially, they do need sort of a, it's because when you're older, you're kind of closer to the edge all the time. I kind of think of it as what you have, when you're younger you kinda have this reserve but when you're older you're using everything you've got just to kinda maintain your mobility to be able to get around a little bit, to the bathroom and what not.*

She continues:

I think that younger people there's more of a drive just to get them going as much as you can. I guess you're always hopeful for the younger ones, whereas, well I mean you're hopeful for everyone. When it's the 16 year olds then you're really hopeful that you're going to be able to do something.

The difference between treating those of different ages is perhaps best described by Joan:

Like if I go in and see a little child and I'm going to the pediatric floor and it's a child with cancer, you're working with the family, you're probably gonna spend a little more time educating at a little more time with that family than the person who

got transferred from the nursing home who has multiple comorbidities and is not going to get better. You're probably not going to put more effort into those people.

It really is tough though

She is very candid and articulates how those who are perceived as being at their natural end-of-life stage will have care provided as per usual, but that someone perceived as having still a long, productive life ahead of them may motivate the physiotherapist to provide more intensive interventions. Isabella feels she has seen this as well from other occupations. She has had much previous experience working in pediatrics before switching to adult care and has noted physicians' practices may also change according to age:

Interviewer: *Do you know why [the physicians practice differently according to age?]*

Isabella: *I'm not sure why. I don't know if the peds oncologist see that more as a lifetime issue for kids and that it's gonna have a big impact over them over their lifetime and I don't know if the adult oncologists, like I don't know. I'm kind of shocked to see so much myopathy and such significant effects from vincristine from an adult when I know that wouldn't happen in a kid. I know in kids if their feet are incredibly in pain there's management for that so I'm not really sure.*

Beth also has seen a difference in assisting those of different ages who have cancer, and how a younger body and spirit might actually pose challenges in ensuring patient safety. For instance, some younger clients, were quick to push themselves beyond the recommended limits in their quest to recover. Although pushing themselves appeared

safe or comfortable to the patients, the physiotherapists cautioned them against such actions and when they continued taking the risks, they [physiotherapists] gave up:

It's really hard with people who are younger, people who are my age and younger who get very sick with cancer and have been on my palliative care unit and they have things that they want to do because they still have this gumption. Again their transfers are no longer safe, they really shouldn't be moving but yet they still are and there's no way you can convince them out of it. And so in those cases, on several occasions pulled myself back and said OK I've set them up as best as they can but I really don't think they should be moving and I've recommended they don't but in the end they don't care and they do it anyway and the nurses are breaking their backs.

Fear in providing cancer care

Many of those who worked directly on oncology specific units spoke of how their colleagues had discussed concerns of working with those living with cancer, or that they were not open to being a part of such a time. Lily felt some of her colleagues had expressed this very thing and offered this insight:

So then I think people were intimidated by [cancer] because they didn't feel they had the skills or the education to treat [someone with cancer], which is like how people feel if they had a concussion or vestibular issue, you feel like you have to have extra training for those things it's not really like what you have is an entry level physio.

Isabella had experienced this same thing, where her colleagues had said to her directly that they would not have considered intervening to the level that she had and assisted the person living with cancer who had pelvic mets to return to walking. She felt her colleagues were afraid of providing that level of care and made recommendations for further education. Isabella spoke further to that point:

Well I think the fear component would be addressed by education itself so people have a better understanding.

Beliefs about capabilities

The domain of beliefs about capabilities is related to how physiotherapists felt they were able to handle assisting those living with cancer, as well as in what way this assistance helped those living with cancer. It also included a discussion about challenges that might occur in assisting those with cancer, which became a discussion of being able to use professional insights on how to assist someone who may be unwell/unable to participate versus someone who may just not be willing to participate in general.

Assisting with quality of life

The participant's beliefs about capabilities was related to the confidence they had in providing care to those living with cancer and to what capacity physiotherapy can assist in cancer care in an overall sense. Over and over, physiotherapists spoke of how the profession contributes to quality of life for the person living with cancer.

I really wanted to be able to, for me was really I wanted to be able to say "OK, OK how can we most empower and add value to quality in life." And understanding what the patient's goal is and that individual's goal is to give them

the best quality within their life. You know it's not my goal it's what they want.

(Isabella)

*Well I guess my whole thing is their treatments have allowed them to survive, but they won't have the quality of life necessarily without...the breast cancer ones they have the chemo and then fatigue after that. The lack of range of motion and the lack of function. For the pelvic floor they'll lose their sexuality, which is a huge change for women that way. For incontinence for the men you know they may never leave their house if they're afraid of incontinence. Their treatments let them survive but leave them with such impairments that they can't thrive so that's where we come in. **(Kate):***

Understanding the underlying reason someone living with cancer may participate in physiotherapy interventions

Discussions occurred around a physiotherapist's ability to get people to participate in therapy and be motivated while having a cancer diagnosis. Indeed, there was a balance to play between knowing when someone is having a challenge in completing physical activity and movement due to previous lifestyles and acknowledging there are challenges faced by those living with cancer that make it difficult to participate in physiotherapy. Isabella approached it by building a professional relationship with the individual:

I think for me it's about trying to build a rapport first so that somebody can trust you and having consistency in your therapist too makes a difference. Like I know I can go in with somebody that I've built some trust with and I could know today is

not a good day so I'd say let's negotiate. I would say do you wanna wait for half an hour and will try it again, let's time it with your meds and let's try it with that. If they can have a bit more power in it then I found that seems to set up a bit more buy in.

Beliefs about consequences

This domain is related to the perceptions physiotherapists may or may not have about the harms that may be caused by providing inappropriate interventions to someone living with cancer. Conversations were had to understand if they were able to take their role and its afore discussed boundaries and then see if they were able to understand the implications of intervening outside of these boundaries.

Harmful consequences

Related to one's belief about what they can globally contribute to a person living with cancer's care are the harms that might come with physiotherapy interventions. All participants spoke of how their formal university education prepared them to identify the things that would absolutely do harm if someone has cancer. As such, all spoke of how they would consult with the appropriate professional, usually a physician, but sometimes other relevant health care professionals on the implications of their proposed treatment plans. A situation occurred for Joan when she was assessing a patient who had been referred to her for neck pain and the person at that time did not have a cancer diagnosis. However, upon examining him, she realized there were findings that were concerning. She consulted with the physician:

So when I did the scan I knew it was not an orthopedic issue and I knew it was not a neuro issue... I obviously didn't tell him "you may have cancer" because I didn't know what it was it could have been something else. But I did feel confident that it was something that was not within my scope of practice... After doing my screening I realized there was something more going on so he did have a diagnosis subsequently with cancer.

Physiotherapists also spoke about the consequences that might occur in the absence of properly time physiotherapy intervention. Lily indicated:

I guess a physio could reduce hospital stay. I mean that's what you would have to look at. anytime you do some sort of preventative type treatment it's kind of hard to prove those things.

Kate indicated how there is always a place for a physiotherapist to be involved, it just may be using a different complement of skills depending on the moment:

Interviewer: *Are there any risks for physio to being involved? Anything a physiotherapist should not do? I know there's a scope, so within their scope is there anything that something has occurred with somebody who has cancer and physiotherapy intervention shouldn't occur at all?*

Kate: *At all? I think there's always something we have to offer. I mean there's bone mets in a lot of contraindications but even, I've seen people right up until very soon before their death for lymphoedema management even just for comfort to keep their swelling under control just so they can still mobilize to the washroom or that kind of thing. I don't work in*

palliative care now, but I have covered up there on weekends and things so there's certainly a role even right to the end just for mobility.

Chapter Summary

This chapter is a look at the results as found through a constant comparative analysis of the data compiled from interviews with physiotherapists who work in a publicly funded setting in the province of New Brunswick and provide care to those living with cancer. The Theoretical Domains Framework was extremely useful in providing a strong grounding of the interview guide and acted as a foundation on which to view the responses provided. Of interest in these findings is the concept that the environmental context, or “how the system works”, was intended to provide insights as to how physiotherapists are currently involved in cancer care, and how they might be further incorporated. However, the participants themselves discussed “how the system works” for those living with cancer in New Brunswick is somewhat unique in that some hospitals do not have a cancer-specific inpatient unit. This lack of a geographical location might be responsible for overlooking the unique sequelae that occur as a result of a cancer diagnosis; and as such, advocating for increased physiotherapy services in this sector may not be happening as the totality of cancer may be absorbed into the health care system as a whole. The following chapter will look into each domain separately and discuss how each is currently viewed in existing literature.

Chapter 6: Discussion

This study sought to gain insight into the experience of physiotherapists who are involved in providing care to those who have cancer, but not necessarily as part of a structured program. In this chapter, using the Theoretical Domains Framework, the researcher examines each of the domains, the insights the participants shared and relate them with existing literature. The researcher concludes with an overview of the strengths and limitations of the study as well as future directions of this work.

Environmental Context and Resources: Physiotherapy

To date, most studies have looked at how physiotherapy services are incorporated into larger urban centers who have a structured oncology program (Canestraro et al.,

2013; Dalzell et al., 2017). In New Brunswick, physiotherapists are present in many publicly funded settings, including inpatient medical units, surgical floors, intensive care units, Extra Mural programs and for cancer care specifically, a Stay Strong program exists. This last program is funded by the Regional Health Authority, but primarily is carried out in a privately-funded setting, such as the YMCA.

The College of Physiotherapists of New Brunswick does list the names of all registered and active/non-active physiotherapists in the province as of January 1, 2021. This does not include, however, the city/location they work in, the type of work they are employed with, nor any contact information (College of Physiotherapists, 2021). It is then difficult to ascertain how many would work in publicly or privately funded sectors and in what type of field their work includes.

The referral process

The College of Physiotherapists of New Brunswick also has a record of the Physiotherapy Act, which states that physiotherapists are primary care practitioners, meaning patients may access them without a referral from a physician (College of Physiotherapists, 2021; Government of New Brunswick, 1998). This situation is not that straightforward in practice, however, as private insurance still require a referral from a physician, which supersedes the Physiotherapy Act. Furthermore, a patient would not necessarily be aware of a physiotherapist being of service to them in a hospital setting and would not be able to advocate for their assistance. It would take another team member to identify the person living with cancer has an issue that could be assisted with physiotherapy intervention.

There are very few studies, if any, that examine the process of referring hospital inpatients to access physiotherapy services in Canada for an inpatient service. Most studies that have identified a need to streamline the referral process and improve access have involved outpatient physiotherapy services (not inpatient) that are provided by a publicly funded entity (Deslauriers et al., 2017; Deslauriers et al., 2018; Miller et al., 2010). An attempt to examine this issue has been made in the UK, where they attempted to compare earlier access to inpatient physiotherapy services in the frail elderly. It was found that those who were referred within 24 hours had a decreased length of stay and were less likely to require formal care upon discharge (Hartley et al., 2019). Further studies into how inpatient physiotherapy services are accessed in Canada may assist in identifying variables to assist in timely access, as well as may identify areas where inappropriate referrals might be increasing demands on physiotherapists that could be mitigated with a more streamlined referral process.

Lack of physiotherapy services in oncology

The participants acknowledged there is a lack of presence for physiotherapists on an oncology team. This is supported by the literature, outlined in Chapter 2 and is indeed the impetus for this study. As will be discussed in “Environmental Context and Resources: Cancer”, there is perhaps a previously unidentified reason for this in New Brunswick. Further studies looking into how physiotherapists become integrated into cancer care might also prove useful to gain insights into the process of becoming a team member in this area.

Being involved preventatively

In this study, participants from one city had advocated to be more involved in patient care, primarily at the moment of breast cancer diagnosis as a preventative endeavour. Physiotherapy management and some physiotherapists had met with surgeons, discussed their role in cancer care and how they would be able to assist these people in a variety of ways; primarily, they were looking to assist with the prevention of many physical and emotional sequelae by seeing them pre-operatively. The physicians indicated they were not interested, and 10 years later, physiotherapists are still not involved pre-operatively in this city. This is in contrast to other cities in New Brunswick, where similar patient populations are receiving this service.

The provision of physiotherapy interventions pre-operatively, or “pre-habilitation” is gaining momentum in the literature and in some centers, where pressure to reduce health-related costs occur in the health care system. As has been previously discussed in this document, cancer and its interventions can decrease one’s quality of life due to both physical and psychological reasons. Pre-habilitation is defined as a process along the cancer care continuum that occurs between diagnosis and prior to implementing interventions aimed at combatting cancer. It should incorporate both physical and psychological components, as the two are closely linked (Silver, 2013). Pre-habilitation has been shown to be effective in reducing hospital length of stay, improve muscle mass, decrease surgical complications and improve health quality of life indices in those living with cancer. It is also important to note it is not meant to replace post-intervention rehabilitation, rather it is meant to be additive to the cancer continuum of care (Santa Mina et al., 2021).

A recent systematic review has shown that pre-habilitation in breast cancer may decrease pain, improve functional recovery, improve shoulder range of motion and grip strength and improve overall fitness (Yang et al., 2018). Furthermore, a recent feasibility study was conducted, where women who were given an exercise program to complete between diagnosis and treatment commencement. Participants described the program as convenient as it involved body weight exercises and/or resistance band activities, all of which were easy to carry out in any location. They indicated that they felt it facilitated recovery and provided a positive distraction, as well as it became a catalyst for positive health behavior changes (Brahmbhatt et al., 2020).

In the elderly, it is quite common for comorbidities to exist. Furthermore, molecular and metabolic changes in the elderly may impact how their bodies process and interact with pharmacological agents used to combat cancer (Owusu & Berger, 2014). These can lead to deconditioning and an increased potential for post-op complications. Efforts to mitigate these complications are worthwhile to increase positive outcomes for both the individual and on the health care system as a whole (Carli et al., 2020; Santa Mina, 2021). Adding pre-habilitation to those in this population have shown positive results. A recent systematic review and meta-analysis indicated that those receiving exercise-based pre-interventions had lower rates of pulmonary complications, decreased length of stay and the most effective pre-habilitation programs were those that incorporated both physical and nutritional components, resulting in a decrease in length of stay, delirium, and improved 6 minute walk test, among other outcomes (Daniels et al., 2020).

Given New Brunswick ranks third in the country as having new incidents of cancer less than only Newfoundland and Labrador and Nova Scotia (Statistics Canada, 2021), it is important to attempt to decrease costs and improve patient outcomes. Furthermore, in New Brunswick, breast cancer is predicted to be the number one type of cancer to be diagnosed in females, followed by lung cancer being the next most prevalent (Canadian Cancer Society, 2020). The addition of pre-habilitation could assist in both individual as well as population health outcomes.

Differences noted from other jurisdictions

Because this is among the first study to look at how physiotherapy services are distributed for those living with cancer in New Brunswick and most studies look at this issue in larger academic centers (Canestraro et al., 2013; Dalzell et al., 2017), it is difficult to compare the current insights to what has been reported in the literature. Further studies looking at how each province might allocate physiotherapy services and direct comparisons between them might prove useful in further understanding how cancer care is provided in Canada.

Environmental Context: Cancer

Of the findings, one of the most interesting insights was how cancer care is carried out in general in New Brunswick. Participants spoke of how it is common for those who have cancer to be admitted to a variety of hospital units. Indeed, some spoke of how, other than a palliative care unit, their hospital did not have a unit dedicated solely to oncology inpatients at all. By this consideration, it is difficult for a physiotherapist to be working on a dedicated oncology unit since it simply does not exist. This strengthens this

project's goal of engaging with physiotherapists who do not necessarily work on an oncology-dedicated unit but still come into contact with those with cancer, as this is the situation for many New Brunswick physiotherapists.

Given cancer is common in New Brunswick's population, with over 6000 new cases reported and accounting for approximately 2000 deaths in the year 2020 (Canadian Cancer Society, 2020), it is a condition that deserves recognition for both its uniqueness and frequent occurrence. More populous provinces were seen to be able to provide standardized, unique care to several types of cancer-specific diagnoses. For instance, participant Amie indicated that Alberta was able to carry out numerous outpatient classes for those with a prostate cancer diagnosis. She elaborated how this cannot be replicated in New Brunswick as the population is too small to result in enough participants to make it worthwhile.

Geographical space: cancer as a diagnosis or a sequelae

Oncology services, and thus studies, have typically been focused on being carried out in larger academic centres. However, with a greater focus on ambulatory care and a "closer to home" approach, many provinces do offer a large complement of services in a center closer to the patient's home (Brigden et al., 2015). Attracting medical oncologists to community centers has proven difficult, likely due to a decrease in academic opportunities. Community oncologists tend to have a more generalized knowledge of many cancer diagnoses, whereas medical oncologists in academic centres tend to specialize in 1 or 2 types of cancer (Brigden et al., 2015). Also, because they do not tend to be part of a bigger practicing group, they are usually responsible for the more pressing

issues. Other issues that may arise, as well as hospital admissions, are usually supervised by general practitioners (Brigden et al., 2015). This could be why supportive services, such as physiotherapy, may not be top of mind for these physicians, as it is not necessarily an area they have received specialized training in. The College of Physicians and Surgeons of New Brunswick lists 10 medical oncologists in Moncton, 5 in Saint John and 3 in Fredericton (College of Physicians and Surgeons of New Brunswick, 2021).

Types of cancer: are they important to differentiate?

Furthermore, as discussed by Hallie, each region in the Regional Health Authority has decided to approach cancer care differently, although strategies to standardize this care seem to be commencing. The use of a breast cancer navigator was seen as a positive addition, making the experience for the person who has cancer much less overwhelming and seamless. According to the participants, this not only does not exist for all regions, it does not exist for all cancer diagnoses. This can only be seen to be a potential gap in the overall continuum of care for those living with cancer, let alone as an attempt at holistic care, which would see physiotherapy services further integrated into the journey.

Patient navigators were first developed in the 1990s in an effort to connect minorities and economically disadvantaged persons to all appropriate cancer interventions. It has since blossomed into a profession that assists a wide variety of individuals accessing health care services for a multitude of conditions (Walkinshaw b, 2011). In Canada, cancer patient navigation is defined as “a proactive, intentional process of collaborating with a person and his or her family to provide guidance as they negotiate

the maze of treatments, services and potential barriers throughout the cancer journey” (Canadian Partnership Against Cancer, 2012).

Patient navigators in oncology are a patient’s constant connection, acting as guides to move through a complex system of information and the wide variety of healthcare professionals who are involved along the way. In general, a person who has cancer will interact with a minimum of 13 (and an average of 32) physicians once they progress past stage 1 of cancer. This is not to mention the variety of nurses and allied health professionals involved along the way, leading to communication challenges, something that exists regularly in the health care system. A patient navigator can be the bridge for the individual, being available to answer their questions as well as link the information from all the resources they’ve consulted with. It also is a professional who can assist in making recommendations for financial resources, such as covering costs for travel, or funding programs for lost wages (Walkinshaw (a), 2011). This may be a way in moving forward in cancer care in New Brunswick, as this person would be specialized in the field of cancer, would be knowledgeable of all the resources available, would be a constant presence and available for patient questions, as well as ensuring a holistic approach, incorporating many health professionals would occur.

Social influences

How physiotherapists and others see physiotherapy interventions in cancer care

As was discussed by participants, it is apparent many team members, and indeed even other physiotherapists, are not aware of the positive aspects a physiotherapist can provide to someone who is going through the various stages of cancer. This is supported

in the literature review chapter of this document which showed many oncologists, other healthcare professionals, patients, and even physiotherapists themselves are unaware of the positive aspects physiotherapy can offer to those with cancer (Jones et al., 2005; Sheill et al., 2017; Cantwell et al., 2018; O’Hanlon & Kennedy, 2014; Smith-Turchyn et al., 2016; Williams et al, 2015). As two participants discussed, they had tried to advocate to have physiotherapy implemented earlier on, at the moment of diagnosis, for those with breast cancer but were met with a firm “no” from a physician and to this day, services do not exist for this population at that moment in time.

Support systems for physiotherapy and cancer care

As such, who’s responsibility is it to advocate for exercise and physiotherapy services in the cancer continuum? The participants themselves indicated that physiotherapists should advocate, some indicate patients are well poised to do so. Obviously, implementing any program into healthcare is a multi-level, multi-stakeholder approach. Policy development is a lengthy process. However, one possible way forward is adopting a strategy employed similar to the smoking cessation programs that have contributed to reductions in smoking (Statistics Canada, 2021).

In 2007, the American College of Sports Medicine launched an initiative termed the Exercise in Medicine (EIM) approach, aimed at incorporating exercise into routine medical care for chronic conditions (Lobelo et al., 2014). By incorporating the 5 As approach used in smoking cessation (ask, advise, agree, assist and arrange for follow-up), they have successfully been able to educate and implement primary health care providers in the efforts of referring patients on to exercise programs with a variety of conditions in

several levels of healthcare in the United States (Lobelo et al., 2014). If one were to do so in oncology, the following would be recommended: assess, advise and refer.

Assessing the person's physical activity status just like assessing any other vital sign, such as blood pressure or heart rate, and have it recorded in one's medical record should be incorporated into routine health care. Currently, some health systems in the US do incorporate physical activity as a documented vital sign. It would then prompt counselling and *advice*. This advice would be to adjust their activity to the recommended levels. Primary care professionals could arrange for follow-up (*referral*) to an appropriate professional (Lobelo et al., 2014).

Even for those who have cancer who exercise regularly, constant monitoring should be done, again much in the format of assessing one's vitals. Once interventions are underway, barriers to activity (fatigue, anxiety, pain) may occur and a referral to an appropriate professional might become needed (Schmitz et al., 2019). Evidence has shown adherence to an exercise program is strengthened when supervised (Bluethmann et al., 2015; Sweegers et al., 2019), and having a professional involved would give access to the person with cancer to a consistent professional to monitor how the program is proceeding.

By having physical activity as a routine question asked by all health professionals, it would normalize the incorporation of exercise into everyone's life, much like people have become accustomed to monitoring or being aware of their cholesterol levels, or what their blood pressure should be, decreasing negative perceptions that might be attached to becoming physically active.

Skills:

Linked to Beliefs about Capabilities

The participants spoke of a wide variety of skills they can bring to those who have cancer, however interestingly, they rarely spoke of the application of physical activity or other therapeutics specifically. They spoke of how they were able to assist with symptom management, educate and empower patients at any and all points of the cancer care continuum, and that listening and being a constant presence and resource helped build trust with the person living with cancer.

All of these skills cumulatively added to increasing one's quality of life, thus this domain became linked with "beliefs about capabilities": the skills a physiotherapist has can bring a direct positive outcome in a person's quality of life after a cancer diagnosis.

The literature supports the notion that physiotherapy can improve quality of life at many points along the cancer continuum. In numerous studies, the implementation of physiotherapy interventions showed an increase in quality of life, as measured by numerous scales (Beurskens et al., 2007; Cuesta-Vargas et al., 2013; Giacalone et al., 2019; Kumar et al., 2018; Granger, 2016). Improvements are observed in a wide range of conditions, from breast cancer, lung cancer, esophageal-gastric cancer and more.

Perhaps the most illustrative of the conditions would be in those with advanced and/or palliative cancer. Physiotherapy interventions have been incorporated at these times and have been shown to improve quality of life for those living with cancer (Kumar & Jim, 2010; Vira et al., 2020). Even at this point in the cancer continuum, interventions aimed at improving muscular strength, cardiovascular fitness, balance and more all serve

to increase one's independence and ability to carry out their activities of daily living (Vira et al., 2020).

Patients themselves have remarked at how improving their quality of life has a dramatic impact. They report being able to participate in more social activities, return to work and feel less of a burden on others (Beurskens et al., 2007; Bennett, 2018).

Participating in physiotherapy interventions led to positive feelings in many as is discussed by this person: "They said the exercise would help and it was hard to believe, because you think it'll make you more tired, but it didn't. It actually worked and the fatigue really lifted. So I was looking forward to it" (Bennett et al., 2018, p. 2618).

This reinforces that some patients with cancer are not familiar with physical activity/ physiotherapy and may be reluctant to participate, but the incorporation of a professional who is able to bring them along in a supervised manner can lead to a better state, both physically and psychologically.

Social/professional role and identity:

Linked to beliefs about consequences

Participants discussed the boundaries of what a physiotherapist can provide when interacting with those with cancer. They realized they were able to assist in many ways, but also understood they had limitations to what they could do and as such, were willing and able to collaborate and consult other professionals when it was necessary. The information obtained from other professionals only served to help the physiotherapist's ability to adapt their interventions accordingly. Thus, knowing the role a physiotherapist has, as well as their limitations, was linked to knowing the consequences that may occur

by providing care that was outside the scope of one's practice. Furthermore, lack of integrating physiotherapy services into the cancer continuum will negatively impact outcomes both at the patient and health care system levels.

All participants spoke of how difficult it is, on a daily basis, to meet the demands of caseloads. They spoke of not having time to adequately perform duties and felt patients were not receiving the care that they would like to be able to provide. The numbers of physiotherapists employed in Canada compared to the number of consultations that are requested would support this view (Conference Board of Canada, 2017a).

New Brunswick is observed to have a high proportion of physiotherapists per capita compared to the national average, with 6.78 per 100,000, compared to 4.0 per 100,000 in all of Canada. Closer examination, however, reveals this number is deceptive. Of those employed, only 4.2 per 100,000 are full time positions, with 2.58 per 100,000 being in a part time position (CIHI, 2020). Thus, timely access to a physiotherapist remains an issue in New Brunswick.

The importance of timely access to rehabilitation services, such as physiotherapy, can have positive effects: community-based rehabilitation services can decrease the number of emergency department visits, can reduce length of stay in hospital and can delay the need for long term care (CIHI, 2012). Seniors aged 65 and over are responsible for the most consultations, as they have numerous chronic conditions, often times having several at once (Conference Board of Canada, 2017c). New Brunswick has observed an increase in consults to physiotherapy services for those aged 65 and over, ranking as the second highest in consultations among the country. The rate of increase was 6.9%, where the rate of population growth in this age group was only 2.4% (Conference Board of

Canada, 2017c), a reflection of the number and health of the seniors in New Brunswick who require more physiotherapy services (Conference board of Canada, 2017c). The average age of a New Brunswicker was found to be 44.3 years of age, second highest, with Newfoundland and Labrador having the highest average age of 44.8. The lowest average age was found in Nunavut, at 28.5. New Brunswick was second highest in those 65 and over, with 21.9% of its population in this age group, again second to Newfoundland and Labrador which had 22.3% of its population 65 and over (Statistics Canada, 2020).

Efforts to improve access should be considered, and one way may be to re-examine how physiotherapists are used in the health care system as a whole. As was just examined, a high proportion of seniors exist in New Brunswick and are responsible for a majority of physiotherapy consultations. Clearly, physiotherapists are attending to the main issues present in this age group, such as general frailty, hip and knee surgeries, arthritis and falls (Conference Board of Canada, 2017a). Furthermore, more and more provincial mandates are making attempts to ensure seniors can age at home, an issue complicated by the general health issues just mentioned. It is understandable the participants indicated they are overworked, as there is clearly much to be done. It can also be understood why cancer, and in particular, incorporating physiotherapy into cancer care, is being overlooked. However, as Hallie mentioned, physiotherapists are not being utilized to their full capacity. Health care expenditures continue to increase and innovative solutions are needed to decrease costs.

As mentioned by several participants, they work closely with physiotherapy assistants (PTAs), who are capable of carrying out physiotherapy services under the

supervision of a physiotherapist (Conference Board of Canada, 2017a). In Canada, PTAs complete a two-year college program in physical rehabilitation training, or a two year college program which combines theoretical and practical training components (Conference Board of Canada, 2017b). There are limitations in their scope of practice; however, they are capable of carrying out the majority of components of a physiotherapy intervention plan as developed by a physiotherapist. They report changes in status to the physiotherapist who then adjusts the plan according to this information (Conference Board of Canada, 2017b). Furthermore, the numbers show there is not a surplus of available physiotherapists. The growth in supply continues, however the unemployment rate among physiotherapists in general is only 0.3% whereas the national unemployment rate is 6.9%, showing the supply that exists is employed and there is no surplus (Conference Board of Canada, 2017b).

The steady growth in consultations and the high employment rate demonstrate a need. Most jurisdictions are moving more to community-based practices in an effort to influence issues in a more preventative manner, before complications arise and are more difficult to reverse. However, in New Brunswick, the majority of physiotherapists remain employed in hospital practice versus community-based settings (Conference Board of Canada, 2017c). As was discussed earlier, pre-habilitation has been shown to be beneficial in oncology care to prevent negative sequelae. This philosophy of upstream, preventative care would prove useful in New Brunswick in general, given the aging population. As such, in totality, increasing the use of PTAs to carry out physiotherapy services and re-deploying physiotherapists in a more preventative, educational type role

could alleviate pressures on the system, potentially allowing for an opportunity to increase physiotherapy services in oncology, as the general pressures would be lessened.

Knowledge

Improving entry-level knowledge

All participants agreed they received minimal oncology-specific training in their university programming. They recognized a degree is meant to equip a new professional with the most well-rounded amount of information and given the breadth of health care conditions that exist, as well as the numerous skills a physiotherapist must be familiar with, it is impossible to cover any one topic in great detail. Many indicated that most of their knowledge in the field of oncology had been acquired after they had finished their degree and that some had taken courses in a professional sphere.

A review of the literature indicates there are no studies that currently outline the oncology content of physiotherapy programs in Canada. The issue was further examined and upon reviewing most physiotherapy program websites, there is no mention of oncology content on the introductory program pages/course descriptions. Further studies that document the content of such programs might prove useful in informing content development for physiotherapy programs to ensure new graduates have a consistent and reliable exposure to relevant entry-level oncology information.

Preparation needed to enter cancer care

Most participants noted that the Canadian Physiotherapy Association was the most likely source to access courses related to physiotherapy practice in oncology. The

Canadian Physiotherapy Association is a body dedicated to providing service, information and connections to other physiotherapists nationally and internationally as well as advocating for issues related to physiotherapists. Membership is not mandatory. There is a fee to join, giving members access to events, educational opportunities in many physiotherapy related fields, as well as access to malpractice insurance and business mentoring (Canadian Physiotherapy Association, 2021).

A quick review of the oncology section reveals there are several online courses available, ranging in cost from \$29.99 to \$350, and range in time from one hour to several hours. Content ranges from general overviews for anyone who may be in contact with someone who has had a diagnosis of cancer, to specific and advanced techniques in breast cancer, lymphedema, and peripheral neuropathies in the pediatric population (Canadian Physiotherapy Association, 2021 b).

Emotion

Many participants noted that they experienced a range of emotions when assisting those who have had a cancer diagnosis. They indicated it was easy to empathize with what the person was going through and that equally, it was likely a source of stress and reluctance for other physiotherapists to become involved in cancer care. However, as was noted by Isabella, she suspected that if physiotherapists were more knowledgeable and received more education in the field of oncology, they may be more willing and less fearful to become involved. Thus, the aforementioned courses available could assist in alleviating some of these fears.

Job satisfaction and empathy

Indeed, working on a daily basis with people who have a life-threatening illness like cancer can lead to healthcare worker burnout, a well-documented event (Ramirez et al., 1995; Grunfeld et al., 2000; Trufelli et al., 2008; Gibson et al., 2021). These also cite one of the most common reasons leading to burnout is that many healthcare professionals can and do empathize with those they are caring for (Trufelli et al., 2008; Gibson et al., 2021). This emotional toll has been linked to a variety of health professionals, allied health included, have considered leaving jobs in the cancer system to go into different fields (Grunfeld et al., 2000). It has also been suggested that burnout can lead to compassion fatigue, which is secondary to traumatic stress and burnout. It is related but appears to be more complex than burnout. The emotional complexities of cancer care has led to programs being developed aimed at mitigating this issue by incorporating things such as compassion fatigue resiliency programs. Among other components, this type of program focuses on incorporating more self-care strategies into one's daily life, as well as challenges one to reflect on their personal mission as a healthcare provider and to temper one's interpersonal interactions (Pfaff et al., 2017). Providing a work culture supporting these types of programs can lead to reduced occupational stress and increased job satisfaction (Pfaff et al., 2017).

Impact of age

The participants noted their reaction to an individual living with cancer's age had some impact on how they approached one's care. This has been noted in the literature as well in other professions. For instance, oncologists have been found to recommend more

intensive chemotherapy regimens for women aged 63 versus if she was 75, even if their health status was equivalent (Foster et al., 2010).

The issue is multi-factorial, but one issue can be traced back to medical professionals practicing in an evidence-based manner. It has been noted that although older adults account for two thirds of new cancer diagnoses, they account for only 30% of clinical trials. This is likely due to the presence of comorbidities and decreased functional status in the older population, but nonetheless creates a gap in the evidence (Lewis et al., 2003). However, it has also been found that older adults may not be offered the opportunity to participate in clinical trials. One such study found that 68% of adults 65 and younger were recruited by their oncologists to participate in trials, versus only 34% of those 65 and older were asked to participate. When controlling for all variables, age and stage of disease were found to be the only predictors of whether a patient was enrolled in a trial or not (Kemeny et al., 2003).

Many have called for evidence-based guidelines for cancer care related to age, as well as have attempted to incorporate a geriatrics assessment tool to better inform decision making for older persons living with cancer. A geriatrics assessment can measure one's functional status, co-morbidities, neurological impairments, cognitive abilities, social supports and others. Using such a tool can inform one's potential to withstand toxicity related to chemotherapy and surgery, the disparities in quality of life after radiotherapy and could include recommendations for supportive care, such as incorporating physiotherapy interventions (VanderWalde & Williams, 2020).

Fear in providing cancer care

Research evidence indicates that educating all health care professionals on how to improve their communication skills with those who have cancer will improve adherence to treatment regimes, improve psychological functioning for the person and improve rates of recovery (Moore et al., 2018). Conversely, poor communication can create anxiety for the person living with cancer, leaving them uncertain and generally unsatisfied with their care (Hagerty et al., 2005). Furthermore, ineffective communication skills have been linked to poor job satisfaction, stress and emotional burnout for health care professionals. Thus having effective communication skills is useful not just for the person living with cancer, but for the healthcare professional as well (Moore et al., 2018). In a recent meta-analysis of communication skills training programs related to cancer care, it was found that educating health care professionals on how to better incorporate open ended questions, show empathy and give facts-only led to better outcomes for patients and healthcare providers. The format in which these courses were delivered varied, and thus conclusions on the best structure for the course remain unclear (Moore et al., 2018). Incorporating a communication skills course for physiotherapists could be an area to be further explored to alleviate fears among physiotherapists who are not currently involved with those with cancer and could also lead to more becoming incorporated into this type of care.

Theoretical Domains Framework

The use of the Theoretical Domains Framework (TDF) was a useful tool that was incorporated from the inception of the study. It allowed for a solid grounding of the interview guide and facilitated the analysis of the data into pre-determined domains.

Because it is a lens through which the data can be viewed, and not a theory in and of itself, it allows to see the data in a more global sense, getting a perspective in many aspects of potential areas that could inform implementation of the service being examined (Michie et al., 2015; Phillips et al., 2015).

In the data analysis, several domains were found not have corresponding information from the participants, despite questions being formulated prior to commencing interviews. This is not uncommon in practice, as has been found in studies looking into the execution of methodologies using the TDF. One such study looked at healthcare professionals' experience using the TDF in carrying out operational health studies as part of their occupational duties. It was found many participants found the domains, at times, had some overlap as the constructs used to define the domains were at times very similar (Phillips et al., 2015). This is further supported in the re-examination of the TDF, resulting in the formation of 14 domains rather than the original 12. Despite its strong content validity, the re-structuring of some domains may mean they do not apply, depending on the issue being examined (Huijg et al., 2014). For instance, in this study, despite asking participants their insights as to the domain of "optimism" or "reinforcement", responses did not correspond to these domains, they were more appropriate to be placed in the domain of "beliefs about capabilities" and "beliefs about consequences" respectively. Given the consistency of this finding, it speaks to the confidence one can have that this finding is more appropriate to be placed in these domains and that "optimism" and "reinforcement" are not a domains of consequence in this particular instance. Indeed, the most original TDF had both of these domains as one

and the revised version separated them (Huijg et al., 2015). However, in this instance, they were not found to be separate but actually very closely attached.

A recent guide that set out to instruct users on how to use the TDF indicated it is possible to develop a study guide and omitting questions relating to domains that have previously been identified as not being relevant to the behaviour being studied in order to preserve both the interviewer and participants' time. However, they also contend that by omitting some domains, it will then be impossible to code this data as they state "if questions are not asked, the text cannot be coded." (Atkins et al., 2017). It was thus the intent of this study to ask questions pertaining to all domains, despite the assumption that it was possible some domains were potentially going to be found as irrelevant.

At the outset of this study, the TDF domain set the interview guide. It aimed to look at the environmental context, or "how the system works" in relation to how physiotherapy services exist in the health care system in relation to cancer care. However, it became evident from participants' responses that New Brunswick has an added layer of "how the system works with cancer services" and this may impact how physiotherapy services "work". Services provided for those with cancer may never be done on an oncology unit, as some cities just do not have this as an option, and as such how physiotherapy services are viewed and integrated into cancer care may get lost, as cancer care itself may be lost due to a lack of geographical space. This may then influence a practitioner's mindset where they may not pay particular attention to the importance and implications of a cancer diagnosis and may be just looking at the superficial presenting features. Thus, with the help of the TDF, understanding the context of how cancer

services exist in New Brunswick may be of note for future considerations in relation to how to better support those living with cancer and providing accurate, holistic care.

Limitations to this study

A variety of limitations can be identified. One note to make is in the use of the Theoretical Domains Framework. An advantage is it covers a wide range of topics, allowing a broad overview of possible barriers and enablers to implementing the target behaviour being examined (McSherry et al., 2012; Phillips et al., 2015). However, the TDF does not provide a manner to be able to link the various domains, or to even suggest how one might impede another. This leaves a gap in interpreting the findings and informing which area would be most useful in addressing as a way forward (Phillips et al., 2015).

Another is participants were from only 2 health care subregions in the province. Although this gives adequate insight into these 2 regions, generalizing to other regions is not possible, as the structure of how cancer services are delivered in other areas may vary. Indeed, the intent of qualitative studies is not to generalize, however it should be noted that given the context is “in New Brunswick” but that only 2 subregions were represented, it is difficult to ascertain if other jurisdictions in New Brunswick experience similar issues.

The final number of participants was 8. The original intent had been to reach 8-10 participants to achieve a richness in detail and a more representative perspective of the experience of providing care to those living with cancer by New Brunswick physiotherapists. It became evident, once a total of 6 interviews had been completed, that

the insights were beginning to reach a level of saturation. Another 2 interviews confirmed that although there were slightly new individual stories told at times, the overall perceptions were well aligned and that saturation of data had been achieved.

Having said that, one counter argument could be made: because participants were from only 2 subregions in New Brunswick, it is possible that insights from those who work in other regions may have resulted in a difference in experience. All efforts were made to reach physiotherapists in all of the province. There were posts made on social media sites to recruit participants. The College of New Brunswick physiotherapists also agreed to share the recruitment information. Prior to allowing the recruitment information to be circulated, the College required the documents be translated. At that time, a qualified translator was contacted, the documents were translated and an amendment to the ethics approval was submitted to the Research Ethics Board of the University of New Brunswick. They granted the ethics approval and subsequently, the College circulated the recruitment document. Indeed, this is where several participants from one particular subregion came forward to discuss their issues with having physicians refer those who were to have breast cancer surgeries pre-operatively, however no other participants from other subregions came forward. This perhaps is all related to the enlightening discovery of how cancer services exist in the New Brunswick environmental context in that many regions do not have cancer-dedicated units. As was discussed by the participants, when one interacts with those who have cancer, but it is out of context/not on an oncology unit, they are potentially neglecting to give much importance to the diagnosis of cancer and instead focus on the sequelae they have been consulted to address. This may then reveal also why some physiotherapists did not come forward to participate: they may fail to

realize they are actually providing care to those with cancer in their everyday interactions, but it is not the main reason for being consulted and as such, neglect to actually realize they are involved in cancer care.

The median number of years for the physiotherapists' experience was 21 years, with the "newest" to the profession having 11 years of experience. Insights from physiotherapists who are newer to the profession could provide information as to the types of knowledge their university programs are providing and how prepared they feel they are to interact with those who have cancer, among other insights.

Strengths to this study

This study was conducted with a variety of physiotherapists who have many years of experience and thus a wide range of situations in which they can speak to the subject matter. The interviews had the theoretical domains framework as a guide, however they participants were allowed to speak freely and were given the time and opportunity to express their views. This is evidenced from the results that provided a new and fresh glimpse into how physiotherapy cancer interventions are carried out on publicly funded services. For instance, the domain and guide led to questions as to how physiotherapists were situated in the system, however by allowing them to speak freely, it became apparent they noted that it is not only how physiotherapists are situated, but how cancer itself is situated in the health care system of New Brunswick that might provide insight into implementing further services into this field.

Future Directions

This study provided valuable insights into the experience of physiotherapists providing care to those who have cancer in a variety of public settings in New Brunswick. Classifying New Brunswick's scope, being rural or urban, academic or community practice, are difficult and literature does not seem to define this appropriately. Certainly, New Brunswick has some differences compared to more populated areas of the country, combined with an aging population that brings with it challenges that other areas may not experience. Having a deeper understanding of how those living with cancer access the health care system could prove beneficial in identifying gaps that exist in their care in New Brunswick. It could also prove useful in ensuring medical interventions are adhered to, improving outcomes for both the patient and the health care system in general.

Knowledge translation is an important part of many research studies. As part of the Canadian Institute of Health Research (CIHR) act, which is the major federal research funding agency, the steps of knowledge translation are all of those between the creation of new knowledge and its application to create benefits for society. The CIHR defines knowledge translation as *“a dynamic and iterative process that includes the synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of Canadians, provide more effective health services and products and strengthen the healthcare system.”* (CIHR, 2007, p. 1).

The current study aims to disseminate the findings in a variety of formats. Preliminary results have already been presented at the 2021 University of New Brunswick's Graduate Student Association Conference, held virtually in May. Other relevant conferences, including the Canadian Physiotherapy Association's annual

conference, will be identified as places to present, as well as publications in peer-reviewed journals will be completed. Further, to adhere to CIHR's definition of knowledge translation, the exchange of ideas that come from relevant conferences will be used to inform future directions for similar studies in this topic.

Chapter Summary

This chapter took the participants' insights and discussed them in light of current literature findings. Given that this is among the first study looking at perspectives of physiotherapists providing care to those living with cancer in New Brunswick, which is not the traditional study which is generally conducted in larger, urban centers, some unique findings were revealed. As well, by using the Theoretical Domains Framework as a lens in which to look at the broad system of physiotherapy and cancer care, a variety of influences that might be affecting the ultimate reason why these services are not routinely incorporated were explored. Future studies that look at each of these issues in a more in-depth manner may assist in implementing this care as a standard of care for New Brunswickers in general.

Table 1. The Theoretical Domains Framework, domains and constructs (Atkins et al., 2017, p. 4)

Version 2	
Domain (definition)	Constructs
1. Knowledge (An awareness of the existence of something)	Knowledge (including knowledge of condition/scientific rationale) Procedural knowledge Knowledge of task environment
2. Skills (An ability or proficiency acquired through practice)	Skills Skills development Competence Ability Interpersonal skills Practice Skill assessment
3. Social/professional role and identity (A coherent set of behaviours and displayed personal qualities of an individual in a social or work setting)	Professional identity Professional role Social identity Identity Professional boundaries Professional confidence Group identity Leadership Organisational commitment
4. Beliefs about capabilities (Acceptance of the truth, reality or validity about an ability, talent or facility that a person can put to constructive use)	Self-confidence Perceived competence Self-efficacy Perceived behavioural control Beliefs Self-esteem Empowerment Professional confidence
5. Optimism (The confidence that things will happen for the best or that desired goals will be attained)	Optimism Pessimism Unrealistic optimism Identity
6. Beliefs about Consequences (Acceptance of the truth, reality, or validity about outcomes of a behaviour in a given situation)	Beliefs Outcome expectancies Characteristics of outcome expectancies Anticipated regret Consequents
7. Reinforcement (Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus)	Rewards (proximal/distal, valued/not valued, probable/improbable) Incentives Punishment

	<p>Consequents Reinforcement Contingencies Sanctions</p>
8. Intentions (A conscious decision to perform a behaviour or a resolve to act in a certain way)	<p>Stability of intentions Stages of change model Transtheoretical model and stages of change</p>
9. Goals (Mental representations of outcomes or end states that an individual wants to achieve)	<p>Goals (distal/proximal) Goal priority Goal/target setting Goals (autonomous/controlled) Action planning Implementation intention</p>
10. Memory, attention and decision processes (The ability to retain information, focus selectively on aspects of the environment and choose between two or more alternatives)	<p>Memory Attention Attention control Decision making Cognitive overload/tiredness</p>
11. Environmental context and resources (Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence and adaptive behaviour)	<p>Environmental stressors Resources/material resources Organisational culture/climate Salient events/critical incidents Person × environment interaction Barriers and facilitators</p>
12. Social influences (Those interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviours)	<p>Social pressure Social norms Group conformity Social comparisons Group norms Social support Power Intergroup conflict Alienation Group identity Modelling</p>
13. Emotion (A complex reaction pattern, involving experiential, behavioural, and physiological elements, by which the individual attempts to deal with a personally significant matter or event)	<p>Fear Anxiety Affect Stress Depression Positive/negative affect Burn-out</p>
14. Behavioural regulation (Anything aimed at managing or changing objectively observed or measured actions)	<p>Self-monitoring Breaking habit</p>

Appendix I
Recruitment poster



Department of Applied Health Services Research University of
New Brunswick
Physiotherapists' perspectives on providing care to those with
cancer in New Brunswick

WE'RE LOOKING FOR YOU!

Open to all physiotherapists who have worked with adults who have had
cancer, from the moment of diagnosis and/or beyond, while in hospital.

In appreciation for your time in completing a 30-60 minute interview,
you will receive a \$25 e-gift card.

For more information to participate, contact Lyne Ouellet,
ptnbstudy@gmail.com

**Appendix II
Demographics**

Pseudoname	Years worked	Years worked on publicly funded service	Worked on oncology specific unit	City demographics (population of city)
Amie	28	10	yes	>120,000
Melanie	21	21	no	>120,000
Isabella	29	29	no	>120,000
Joan	21	19	no	>120,000
Lily	11	11	yes	>50,000
Kate	24	24	yes	>50,000
Beth	17	17	no	>50,000
Hallie	23	23	yes	>120,000

Appendix III

Interview guide based on Theoretical Domains Framework, as illustrated in Huijg et al., 2014.

Domain	Construct question	Probes
Knowledge	Do you know of any evidence for physiotherapists and cancer care?	<ul style="list-style-type: none"> -Are you aware of any guidelines or recommendations specifically regarding physical activity in cancer care? -Are you aware of the content of these guidelines or recommendations? -Are you aware of how to provide treatment at the hospital to those with cancer? -At what stage can those with cancer participate in physical activity? -Are there any contraindications for those with cancer to participate in physical activity at a certain time while in hospital?
Skills	What type of training have you received in relation to cancer care?	<ul style="list-style-type: none"> -Have you received training on providing treatment to those with cancer in the hospital? -Have you provided treatment to those with cancer in the hospital? -What types of interventions have you assisted with those with cancer while in hospital?
Social/professional role and identity	Who do you think should be involved in providing physical activity interventions in cancer care?	<ul style="list-style-type: none"> -Who do you think should assist those with cancer with physical activity? -Is providing physical activity treatment with those with cancer a part of being an inpatient physiotherapist? -As a physiotherapist, is it your job or responsibility to provide physical activity to those with cancer while they are admitted in hospital?
Beliefs about capabilities	What are your thoughts if you receive a referral to assist someone with cancer?	<ul style="list-style-type: none"> -Are you confident you can encourage someone with cancer to participate even when they are not motivated? If they are unwell? -Are you confident you could provide treatment even if there is little time? -Are you confident you would do no harm to the someone with cancer?
Optimism	How do you feel about physiotherapy being a standard of care for those with cancer?	<ul style="list-style-type: none"> -Are you optimistic physical activity in the future will be a standard of care in for those with cancer in the hospital?

		-What are your thoughts on physical activity for those with cancer even when they are quite frail?
Beliefs about consequences	Tell me what you think about potential harms and benefits for those who have cancer participating in physiotherapy interventions.	-Have you seen any adverse effects result from those with cancer participating in physical activity? -How would regularly incorporating physical activity into cancer care as a standard of care impact public health?
Reinforcement	How do you think other health care professionals see physiotherapy and its involvement in cancer care?	-What sort of feedback from other health professionals do you get when you provide treatment to those with cancer while they are admitted in hospital?
Intentions		-If 10 individuals with cancer were admitted to your unit today, how many would you expect to provide interventions? -Do you expect to have new referrals for those with cancer when you return to work?
Goals	How important is it for physiotherapists to become a part of cancer care in the realm of the health care system?	-Why should you or should you not become a regular member on an oncology team? -How would you prioritize providing treatment to an individual with cancer over others in your caseload?
Memory, Attention and decision processes		-How often do you forget about guidelines/contraindications in cancer care?
Environmental context and resources		-To what extent is there adequate funding to regularly provide treatment to those with cancer in the hospital? -To what extent do other professionals consult physiotherapists or know of their skills in order to assist those with cancer?
Social influences	What are your thoughts on the type of support your team would have to become a member of an oncology team	-How well supported would you feel by your team to become incorporated into an oncology team member? -How supported would you feel by your physiotherapy management or cohort to join an oncology unit?
Emotion	Generally speaking, what emotions do you feel about providing care to those with cancer from the moment of diagnosis to palliative/end of life care?	-How do you feel about providing care to those with cancer? -Do you feel it is appropriate to introduce physical activity as a component of their care while in hospital? If not, when is it inappropriate to provide this intervention?

Behavioral regulation		-Are you aware of any strategies you've incorporated when treating someone with cancer? -Are you aware of any strategies you've incorporated in order to increase your presence in assisting someone with cancer?
-----------------------	--	--

Appendix IV

Informed consent

Title:

Physiotherapists' perspectives on including physical activity as a component of cancer care in New Brunswick.

Investigator:

Lyne Ouellet, MAHSR candidate, BSc (Biol), BSc (Physiotherapy)

Supervisor:

Dr. David Busolo, RN, PhD, Faculty of Nursing

Dr. Danielle Bouchard, PhD, CEP Faculty of Kinesiology

Purpose of study

My name is Lyne Ouellet, I am a Masters student in the Applied Health Services Research program at the University of New Brunswick, working alongside Dr. David Busolo, who is with the Department of Nursing. Many Canadians have been impacted by cancer, either personally or seeing loved ones go through the illness. Many negative sequelae have been identified both during and after cancer treatments, including fatigue, depression, pain, and muscle dysfunction. There exists a bounty of literature to support the provision of physical activity and physiotherapy interventions, to this population in order to decrease these side effects, and even improve their ability to go through medical interventions, however there is a definite lack of physiotherapy services nationwide in this population. This study seeks to gain insight from practicing physiotherapists through an interview format, from those who have worked with people with cancer on any inpatient unit.

Description of Research:

You are hereby invited to participate in an interview, lasting no longer than 60 minutes via digital media such as Skype, Zoom or FaceTime. Your participation is voluntary and you are not obligated to answer all questions, excluding those you do not feel you wish to answer, and may withdraw at any time. If you chose to withdraw, your answers will not be included in this study. Your participation or withdrawal will have no impact on your standing with the College or with your employment. Your information will be only accessed by the investigators mentioned above.

The content of the interview will be on education received, or not, while in a physiotherapy university program, types of interactions one has had with those with cancer and perspectives on the role, or lack thereof, of physiotherapists in cancer survivorship care.

Indeed, your results are confidential and will be coded to remove identifying pieces of information. The interview will be digitally recorded and a copy of the audio and transcripts will be kept by a password protected file through the University for a period of 7 years and will be destroyed after this time.

Confidentiality will be respected and no information that discloses your identity will be shared with anyone unless required by law (e.g. if the researcher needs to contact law enforcement for cases of abuse). Information regarding your practice with those who have, or have had cancer, will be sought. Your past university courses and any post-undergraduate studies will be questioned. Demographics as to your catchment area will be used to compare different populations as a possible link to the provision of services, or lack thereof. As such, the type of environment you may work in may appear in the final analysis, but no link to your own practice will be made. These variables will be used as a means to determine future efforts in securing more physiotherapy services in such a prevalent patient population.

Should you decide to participate, you will be provided with a \$25 dollar gift card as a means of thanking you for providing your time in order to complete this thesis.

Once the study is completed, a copy of the findings and analysis will be sent to all physiotherapists, again through your Colleges.

Contact:

Should you have any questions regarding this study, please contact Lyne Ouellet at 506-458-7760, collect calls will be accepted, or via email lynejo06@gmail.com.

Concerns can also be addressed with Dr. Mary McKenna, Professor, Faculty of Kinesiology and Assistant Dean, School of Graduate Studies, 506-451-6872, or mmckenna@unb.ca

Signature of Participant: _____

Date: _____

Signature of Witness: _____

Date: _____

Appendix V

Plan for assisting participants in the event of distress

Dealing with distressed participants

For the research assistant

What to do when you encounter a situation where a participant/participants are distressed. While conducting the interviews. Participants may express distress because talking about cancer can evoke memories that can be difficult for them. Dealing with strong emotions can be extremely challenging. A participant may:

- Appear withdrawn and unwilling to share information, or present information in a vague manner
- Be very critical or negative about certain aspects of their perspectives or experiences
- May appear sad or depressed
- May cry or shed tears
- May inform you that it is difficult to talk about their experiences.

When faced with distressed participants, it is important to be aware that

- Experiencing distress is a common and normal reaction especially when talking about certain topics
- Distress can be justified and should be managed accordingly.
- Expression of distress is a sign of an important problem that needs attention.

What to do:

- Maintain a calm and a professional detachment and not become too involved or distressed, or express inappropriate emotion.
- Maintain an open demeanor and be willing to listen to the participant.
- Acknowledge the emotion acknowledge the emotion. Name it and recognize where it is coming from.
- Focus on the issue. Take it seriously and pay full attention to what the participant is saying. Try to understand the source of their distress
- Acknowledge and explore the participant's emotions. Make the participant feel that you have heard what they have said and not judged them.

For example, say. 'I can see that you are stressed and I would like to find out more about what happened to make you feel that way'

- Listen actively and maintain eye contact. Always listen without interrupting.
- You can then paraphrase the information supplied and ask clarifying questions
- Identify the participant's key concerns. For example, say 'Can I just check that I have heard you correctly... you said that you were feeling ...'

- Move on to suggestions regarding how the problem can be overcome and resources that the participant can access. Refer to the distress protocol. Ensure you are aware of where to direct participants if they would like to see a counsellor or mental health service provider. For example refer them to the New Brunswick Physiotherapy Association or the Canadian Mental Health Association, New Brunswick branch.
- Stay with the participant until they calm down or direct them to a quiet room if they request to have some time by themselves. Stay close to the room or at a place where they can easily reach you.
- Follow up with the participant(s) by phone later that day or early the next day to find out how they are doing.
- Document in your field notes and inform Dr. Busolo about the situation.

(McCosker et al., 2001; Gregory et al., 2007).

References

- Al-aama, T. (2011). Falls in the elderly: spectrum and prevention. *Can Fam Physician*, 57(7), 771-776.
- Albrecht, T., & Taylor, AG. (2012). Physical activity in patients with advanced-stage cancer: a systematic review of the literature. *Clinical journal of oncology nursing* 16(3), 293-300. DOI: [10.1188/12.CJON.293-300](https://doi.org/10.1188/12.CJON.293-300)
- Alexander, K., Brijnath, B., & Mazza, D. (2014). Barriers and enablers to delivery of the Healthy Kids Check: an analysis informed by the Theoretical Domains Framework and COM-B model. *Implementation Science* 9(1), 60. DOI: [10.1186/1748-5908-9-60](https://doi.org/10.1186/1748-5908-9-60)
- Atkins, L., Francis, J., Islam, R., O'Connor, D., Patey, A., Ivers, N., Foy, R., ... Michie, S. (2017). A guide to using the Theoretical Domains Framework of behaviour change to investigate implementation problems. *Implementation Science* 12(1), 77. DOI: [10.1186/s13012-017-0605-9](https://doi.org/10.1186/s13012-017-0605-9)
- Aziz, N. (2007). Cancer survivorship research: state of knowledge, challenges and opportunities. *Acta Oncologica*. 46(4), 417-432. DOI: [10.1080/02841860701367878](https://doi.org/10.1080/02841860701367878)
- Berger, A., Gerber, L., & Mayer, D. (2012). Cancer-related fatigue. *Cancer* 118(S8), 2261-2269. DOI: [10.1002/cncr.27475](https://doi.org/10.1002/cncr.27475)
- Bennett, A.E., O'Neill, L., Connolly, D., Guinan, E., Boland, L., Doyle, S., ..., Hussey J. (2018). Patient experiences of a physiotherapy-led multidisciplinary rehabilitative intervention after successful treatment for oesophago-gastric cancer. *Supportive care in cancer* 26(8), 2615-2623. DOI: <https://doi.org/10.1007/s00520-018-4112-6>
- Beurskens, C., van Uden, C., Strobbe, L., Oostendorp, R., & Wobbes, T. (2007). The efficacy of physiotherapy upon shoulder function following axillary dissection in breast cancer, a randomized controlled study. *BMC Cancer* 166. <https://doi.org/10.1186/1471-2407-7-166>
- Berry, L. L., Davis, S. W., Godfrey, F. A., Landercasper, J., & Deming, K. A. (2019). Is it time to reconsider the term "cancer survivor"? *Journal of Psychosocial Oncology*, 37(4), 413–426. <https://doi.org/10.1080/07347332.2018.1522411>

- Binkley, J., Harris, S., Levangie, P., Pearl, M., Guglielmino, J., Kraus, V. & Rowden D (2012). Patient perspectives on breast cancer treatment side effects and the prospective surveillance model for physical rehabilitation for women with breast cancer. *Cancer* 118(S8), 2207-2216. DOI: 10.1002/cncr.27469
- Blaney, J., Lowe-Strong, A., Rankin, J., Campbell, A., Allen, J. & Gracey, J. (2010). The cancer rehabilitation journey: barriers to and facilitators of exercise among patients with cancer related fatigue. *Physical Therapy* 90(8), 1135-1147. DOI: 10.2522/ptj.20090278
- Blaney, J., Lowe-Strong, A., Rankin-Watt, J., Campbell, A. & Gracey, J. (2013). Cancer survivors' fbarriers, facilitators and preferences in the context of fatigue, quality of life and physical activity participation: a questionnaire-survey. *Psycho-Oncology* 22(1), 186-194. DOI: 10.1002/pon.2072
- Bower, J. E. (2014). Cancer-related fatigue: Mechanisms, risk factors, and treatments. *Nature Reviews. Clinical Oncology*, 11(10), 597–609. <http://doi.org/10.1038/nrclinonc.2014.127>
- Brahmbhatt P, Sabiston CM, Lopez C, Chang E, Goodman J, Jones J, McCready D, Randall I, Rotstein S and Santa Mina D (2020) Feasibility of Prehabilitation Prior to Breast Cancer Surgery: A Mixed-Methods Study. *Front. Oncol.* 10:571091. doi: 10.3389/fonc.2020.571091
- Brigden, M., Lam, W., Spadafora, S., El-Maraghi, R., Whitlock, P., & Champion, P. (2015). Update on community oncology practice in Canada: a view from the trenches. *Oncology Exchange* 14(1): 12-16. http://www.oncologyex.com/pdf/vol14_no1/feature_brigden-community-teleoncology-career.pdf
- Canadian Cancer Society (2015). Exercises after breast surgery. Retrieved from Canadian Cancer society: <http://www.cancer.ca/~media/cancer.ca/CW/publications/Exercises%20after%20breast%20surgery/32071-1-NO.pdf>
- Canadian Cancer Society. (2019). *Canadian Cancer Statistics 2019*. Retrieved from Canadian Cancer Society: <http://www.cancer.ca/~media/cancer.ca/CW/cancer%20information/cancer%20101/Canadian%20cancer%20statistics/Canadian-Cancer-Statistics-2019-EN.pdf?la=en>
- Canadian Cancer Society (2019). Canadian Cancer Statistics. Accessed May 12, 2021. <https://cdn.cancer.ca/-/media/files/cancer-information/resources/publications/2019-canadian-cancer-statistics/2019-canadian-cancer-statistics-en.pdf?rev=21343189bc8840c2b0091f7d1582f481&hash=977EAD1B46703F5223B4843F2C6641D0>

- Canadian Cancer Society (2020). Summary of projected number of cancer cases and deaths in New Brunswick (NB) in 2020. <https://cdn.cancer.ca/-/media/files/research/cancer-statistics/2020-statistics/canadian-cancer-statistics/by-province/res-cancerstatistics-canadiancancerstatistics-nb-specific-stats-2020.pdf?rev=9d332e326cf14788a8fa944c042e7f72&hash=B871AF726D890914ED15EC54B0BDCF00>
- Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*, December 2014. Retrieved from <http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/tcps2-eptc2/introduction/>
- Canadian Physiotherapy Association. (2012). *Description of physiotherapy in Canada*. Ottawa. https://physiotherapy.ca/sites/default/files/site_documents/dopen-en.pdf
- Cane, J., O'Connor, D., & Michie, S. (2012). Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implementation Science* 7(1), 37. DOI: 10.1186/1748-5908-7-37
- Canadian Physiotherapy Association (2021). About CPA. Accessed May 16, 2021. <https://physiotherapy.ca>
- Canadian Physiotherapy Association (2021). List of available non-division courses. Accessed May 16, 2021. <https://physiotherapy.ca/oncology-division/education/list-available-non-division-courses>
- Canestraro, A., Nakhle, A., Stack, M., Strong, K., Wright, A., Beauchamp, M., . . . Brooks, D. (2013). Oncology rehabilitation provision and practice patterns across Canada. 94-102. *Physiotherapy Canada* 65(1), 94-102.
- Cantwell, M., Walsh, D., Furlong, B., Moyna, N., McCaffrey, N., Boran, L., . . . Woods, C. (2018). Healthcare professionals' knowledge and practice of physical activity promotion in cancer care: Challenges and solutions. *European Journal of Cancer Care* 27(2), pp: e12795 DOI: 10.1111/ecc.12795
- Carli, F., Bessissow, A., Awasthi, R., & Liberman, S. (2020). Prehabilitation: finally utilizing frailty screening data. *European Journal of Surgical Oncology* 46(3): 321-325. <https://doi.org/10.1016/j.ejso.2020.01.001>
- Caspersen, CJ, Powell, KE & Christenson, GM (1985). Physical activity, exercise and physical fitness: definitions and distinctions for health-related research. *Public Health Reports* 100(2), 126-131. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1424733/pdf/pubhealthrep00100-0016.pdf>

- Charmaz, K. (2015). Grounded theory: Methodology and theory construction. *International Encyclopedia of the Social & Behavioural Sciences*, Second Edition, 402-407. <https://doi.org/10.1016/B978-0-08-097086-8.44029-8>
- Cheng, K., Wong, E., Ling, W., Chan, C., Thompson, D. (2009). Measuring the symptom experience of Chinese cancer patients: a validation of the Chinese version of the Memorial symptom assessment scale. *Journal of pain and symptom management* 37(1), 44-57. DOI: doi.org/10.1016/j.jpainsymman.2007.12.019
- Cheville, A., & Basford, J. (2014). Role of rehabilitation medicine and physical agents in the treatment of cancer-associated pain. *Journal of clinical oncology* 32(16), 1691-1702. DOI: 10.1200/JCO.2013.53.6680
- Christensen, J., Jones, L., Andersen, J., Daugaard, G., Rorth, M., & Hojman, P. (2014). Muscle dysfunction in cancer patients. *Annals of Oncology* 25(5), 947-958. DOI: 10.1093/annonc/mdt551
- CIHI (2012). Health care in Canada: A focus on wait times. Accessed May 16, 2021. https://secure.cihi.ca/free_products/HCIC2012-FullReport-ENweb.pdf
- CIHI (2020). Physiotherapists in Canada. Accessed May 16, 2021. <https://www.cihi.ca/en/physiotherapists-in-canada-2019>
- CIHR (2007). Knowledge Translation at the Canadian Institutes of Health Research: a primer. Focus18. Accessed June 21, 2021. https://ktdrr.org/ktlibrary/articles_pubs/ncddrwork/focus/focus18/Focus18.pdf
- College of Physicians and Surgeons of New Brunswick (2021). Accessed May 13, 2021. <https://cpsnb.org/en/find-physicians/results?Itemid=359&lang=en-CA&lang=en&last+name=&first+name=®ion=1%2C2%2C3%2C4%2C5%2C6%2C7%2C8&city=&metro=&specialty=MO&Search=>
- College of Physiotherapists (2021). Register of Physiotherapists. Accessed May 12, 2021. <http://cptnb.ca/language/en/findphysiotherapists/>
- Conference Board of Canada (2017a). The role of physiotherapy in Canada: Contributing to a stronger health care system. Accessed May 15, 2021. https://physiotherapy.ca/sites/default/files/8648_role-of-physiotherapy_rpt.pdf
- Conference Board of Canada (2017b). The market profile of physiotherapists in Canada. Accessed June 21, 2021. https://www.conferenceboard.ca/temp/a28d9235-4d8c-45fe-94e9-6c9149b8f8cc/8695_Profile-of-Physiotherapists-in-Canada_BR.pdf
- Conference Board of Canada (2017c). Aging well. Implications of an aging population for Physiotherapy in Canada. Accessed June 21, 2021.

https://www.conferenceboard.ca/temp/dadf8209-9ac8-401f-b08c-61d4a02b7d08/9626_AgingWell_CASHC-BR.pdf

- Cormie, P., Atkinson, M., Bucci, L., Cust, A., Eakin, E., Hayes, S.,... Adams, J. (2018). COSA position statement for exercise in cancer care. *Clinical Oncology Society of Australia*. Retrived from <https://www.cosa.org.au/media/332488/cosa-position-statement-v4-web-final.pdf>
- Couper, M; Singer, E; Conrad, F; Groves, R (2008). Risk of disclosure, perceptions of risk and concerns about privacy and confidentiality as factors in survey participation. *Journal of official statistics*. 24(2), 255-275
- Craft, L., Vaniterson, E., Helenowski, I., Rademaker, A., Courneya, K (2012). Exercise effects on depressive symptoms in cancer survivors: a systematic review and meta-analysis. *Cancer Epidemiology, Biomarkers & Prevention : A Publication of the American Association for Cancer Research, Cosponsored by the American Society of Preventive Oncology*, 21(1), 3–19. <http://doi.org/10.1158/1055-9965.EPI-11-0634>
- Cramp, F., & Daniel, J. (2012). Exercise for the management of cancer-related fatigue in adults. *Cochrane Database of Systematic Reviews 11*. DOI: 10.1002/14651858.CD006145.pub3.
- Creswell, J.W. and Poth, C.N. (2018) *Qualitative Inquiry and Research Design Choosing among Five Approaches*. 4th Edition, SAGE Publications, Inc., Thousand Oaks.
- Cuesta-Vargas, A., Buchan, J. & Arroyo-Morales, M. (2013). A multimodal physiotherapy programme plus deep water running for improving cancer-related fatigue and quality of life in breast cancer survivors. *European Journal of Cancer Care*. 23(1): 15-21. <https://doi-org.proxy.hil.unb.ca/10.1111/ecc.12114>
- Dahlin, Y., & Heiwe, S. (2009). Patients' experience of physical therapy within palliative cancer care. *Journal of Palliative care* 25(1), 12-20.
- Daley, A., Bowden, S., Rea, D., Billingham, L., & Carmicheal, A. (2008) What advice are oncologists and surgeons in the United Kingdom giving to breast cancer patients about physical activity? *International Journal of Behavioral Nutrition and Physical Activity* 5(1), 46. DOI: 10.1186/1479-5868-5-46
- Dalzell, M.A., Smirnow, N., Sateren, W., Sintharaphone, A., Ibrahim, M., Mastroianni, L.,... O'brien, S. (2017). Rehabilitation and exercise oncology program: translating research into a model of care. *Current Oncology*. 24(3), 191-198. DOI: [10.3747/co.24.3498](https://doi.org/10.3747/co.24.3498)
- Daniels, S., Lee, M., George, J., Moug, S., Wilson, T., Brown, S., & Wyld, L. (2020). Prehabilitation in elective abdominal cancer surgery in older patients: systematic review and meta-analysis. *BJS Open* 4(6). DOI: 10.1002/bjs5.50347

- Davies, P., Walker, A., & Grimshaw, J. (2010). A systematic review of the use of theory in the design of guideline dissemination and implementation strategies and interpretation of the results of rigorous evaluations. *Implementation Science* 5(1), 14. DOI: 10.1186/1748-5908-5-14
- Deakin, H. & Wakefield, K. (2013). Skype interviewing: reflections of two PhD researchers. *Qualitative Research* 14(5), 603-616. DOI: <https://doi.org/10.1177/1468794113488126>
- Denscombe, M. (2014). *The Good Research Guide : For Small-scale Research Projects* (Vol. Fifth edition). Maidenhead, Berkshire: McGraw-Hill Education
- deOliviera, C., Weir, S., Rangrej, J., Krahn, M., Mittman, N., Hoch, J., Chan, K., & Peacock, S. (2018). The economic burden of cancer care in Canada: a population-based cost study. *Canadian Medical Association Journal* 6(1), E1-E10. DOI: 10.9778/cmajo.20170144
- Designing theoretically-informed implementation interventions (2006). *Implementation Science* 1(1), 4. DOI: 10.1186/1748-5908-1-4
- Deslauriers, S., Raymond, M.-H., Laliberté, M., Lavoie, A., Desmeules, F., Feldman D. & Perreault, K. (2017) Access to publicly funded outpatient physiotherapy services in Quebec: waiting lists and management strategies, *Disability and Rehabilitation*, 39:26, 2648-2656, DOI: [10.1080/09638288.2016.1238967](https://doi.org/10.1080/09638288.2016.1238967)
- Deslauriers, S., Raymond, M.-H., Laliberté, M., Hudon, A., Desmeules, F., Feldman, D. & Perreault, K. (2018). Prioritization of Referrals in Outpatient Physiotherapy Departments in Québec and Implications for Equity in Access. *Canadian Journal of Bioethics / Revue canadienne de bioéthique*, 1(3), 49–60. <https://doi.org/10.7202/1058251ar>
- Dickert, N; Eyal, N; Goldkind, S; Grady, C; Joffe, S; Lo, B; Miller, F; Pentz, R; Silbergleit, R; Weinfurt, K; Wendler, D; Kim, S (2017). Reframing consent for clinical research: a function based approach. *The American journal of bioethics* 17(12), 3-11. <https://doi.org/10.1080/15265161.2017.1388448>
- Dolan, L; Barry, D; Petrella, T; Davey, L; Minnes, A; Yantzi, A; Marzolini, S; Oh, Paul (2018). The cardiac rehabilitation model improves fitness, quality of life, and depression in breast cancer survivors. *Journal of cardiopulmonary rehabilitation and prevention* 38(4), 246-252. DOI: 10.1097/HCR.0000000000000256
- Francis, J., Johnston, M., Robertson, C., Glidewell, L., Entwistle, V., Eccles, M., & Grimshaw, J. (2010). What is an adequate sample size? Operationalising data saturation for theory-based interview studies. *Psychology & Health* 25(10), 1229-1245. DOI: 10.1080/08870440903194015

- Foster J, Salinas G, Mansell D, Williamson J, Casebeer L. How does older age influence oncologists' cancer management?. *Oncologist*. 2010;15(6):584-592. doi:10.1634/theoncologist.2009-0198
- Gardner, J., Livingston, P. & Fraser, S. (2014). Effects of exercise on treatment-related adverse effects for patients with prostate cancer receiving androgen-deprivation therapy: a systematic review. *Journal of clinical oncology: official journal of the American Society of Clinical Oncology* 32(4), 335-346. DOI: 10.1200/JCO.2013.49.5523
- Garmy, P. & Jakobsson, L. (2018). Experiences of cancer rehabilitation: a cross-sectional study. *Journal of Clinical Nursing* 27(9-10), 2014-2021. DOI: 10.1111/jocn.14321
- Gentles, S., Charles, C., Ploeg, J., & McKibbin, K. (2015). Sampling in qualitative research: Insights from an overview of the methods literature. *The Qualitative Report*, 20(11), 1772-1789. <https://nsuworks.nova.edu/tqr/vol20/iss11/5>
- Giacalone, A., Alessandria, P., & Ruberti, E. (2019). The Physiotherapy Intervention for Shoulder Pain in Patients Treated for Breast Cancer: Systematic Review. *Cureus* 11(12): e6416. DOI: [10.7759/cureus.6416](https://doi.org/10.7759/cureus.6416)
- Gibson, C., O'Connor, M. Whire, R., Baxi, S., & Halkett, G. (2021). Burnout or Fadeaway: experiences of health professionals caring for patients with head and neck cancers. *European Journal of Oncology Nursing* 50: <https://doi.org/10.1016/j.ejon.2020.101881>
- Glaser, B. (1965). The constant comparative method of qualitative method of analysis. *Social problems* 12(4), 436-445.
- Glare, P. A., Davies, P. S., Finlay, E., Gulati, A., Lemanne, D., Moryl, N., ... Syrjala, K. L. (2014). Pain in Cancer Survivors. *Journal of Clinical Oncology*, 32(16), 1739–1747. <http://doi.org/10.1200/JCO.2013.52.4629>
- Government of Canada. (2014). *The Chief Public Health Officer's Health Report on the State of Public Health in Canada 2014-Changing demographics, aging and health*. <https://www.canada.ca/en/public-health/corporate/publications/chief-public-health-officer-reports-state-public-health-canada/chief-public-health-officer-report-on-state-public-health-canada-2014-public-health-future/changing-demographics.html>.
- Government of Canada and Canadian Cancer Society (2015). *Canadian cancer statistics: special topic: predictions of the future burden of cancer in Canada*.
- Government of New Brunswick (1998). Bill 21. Accessed May 12, 2021. <https://www.gnb.ca/legis/bill/file/56/4/bill-27-e.htm>

- Gracey, J. H., Watson, M., Payne, C., Rankin, J., & Dunwoody, L. (2016). Translation research: “Back on Track”, a multiprofessional rehabilitation service for cancer-related fatigue. *BMJ Supportive & Palliative Care*, 6(1), 94–96. <http://doi.org/10.1136/bmjspcare-2014-000692>
- Granger, C. (2016). Physiotherapy management of lung cancer. *Journal of Physiotherapy*. 62(2): 60-67. <https://doi.org/10.1016/j.jphys.2016.02.010>
- Granger, C., Parry, S., Denehy, L., & Remedios, L. (2018). Evidence, education and multi-disciplinary integration are needed to embed exercise into lung cancer clinical care: A qualitative study involving physiotherapists. *Physiotherapy Theory and Practice* 34(11), 852-860. DOI: 10.1080/09593985.2018.1425939
- Gregory, D., Russell, C., Phillips, L. (1997). Beyond textual perfection: transcribers as vulnerable persons. *Qualitative Health Research*, 7(2), 294-300.
- Grunfeld, E., Whelan, T., Zitzelsberger, L., Willan, A., Montesanto, B., Evans, W. (2000) Cancer care workers in Ontario: prevalence of burnout, job stress and job satisfaction. *CMAJ*. 163(2):166-9. <https://pubmed.ncbi.nlm.nih.gov/10934978/>
- Guerard, E., Deal, M., Williams, G., Jolly, T., Nyrop, K., & Muss, H. (2015). Falls in Older adults with cancer: evaluation by oncology providers. *Journal of clinical oncology practice*. 11(6), 470-475. DOI: 10.1200/JCP.2014.003517
- Hagerty, R., Butow, P., Ellis, P., Dimitry, S., & Tattersall, M. (2005). Communicating prognosis in cancer care: a systematic review of literature. *Annals of oncology*. 16(7): 1005-1053. <https://doi.org/10.1093/annonc/mdi211>
- Hartley, P., Keevil, V., Alushi, L., Charles, R., Conroy, E., Costello, P., Dixon, B...Romero-Ortuno R.(2019). Earlier Physical Therapy Input Is Associated With a Reduced Length of Hospital Stay and Reduced Care Needs on Discharge in Frail Older Inpatients: An Observational Study. *J Geriatr Phys Ther*. 42(2):E7-E14. doi: 10.1519/JPT.000000000000134.
- Hayes, S., Johansson, K., Alfano, C., & Schmitz, K. (2011). Exercise for breast cancer survivors: bridging the gap between evidence and practice. : 539-544. . *Translational behavioural medicine*. 1(4), 539-544.
- Hektoen L.F., Aas E., & Luras H. (2009) Cost-effectiveness in fall prevention for older women. *Scandinavian Journal of Public Health*. 37 (6), 584-589
- Hunt, M. (2009). Strengths and challenges in the use of interpretive description: reflections arising from a study of moral experience of health professionals in humanitarian work. *Qualitative Health Research* 19(9): 1284-1292. DOI: 10.1177/1049732309344612

- Irvine L., Conroy S.P., & Sach T. (2010). Cost-effectiveness of a day hospital falls prevention programme for screened community-dwelling older people at high risk of falls. *Age and Ageing*. 39(6), 710-6.
- Jones, J.; Olson, K., Catton, P., Catton, C., Fleshner, N., Krzyzamoska, M., ...Howell, D. (2016). Cancer-related fatigue and associated disability in post-treatment cancer survivors. *Journal of Cancer Survivorship* 10(1), 51-61. DOI: 10.1007/s11764-015-0450-2
- Jones, L., & Alfano, C. (2013). Exercise-oncology research: Past, present, and future. *Acta Oncologica*, 52(2), 195-215.
- Jones, L., Courneya, K., Fairey, A., & Mackey, J. (2004). Effects of an Oncologist's Recommendation to Exercise on Self-Reported Exercise Behavior in Newly Diagnosed Breast Cancer Survivors: A Single-Blind, Randomized Controlled Trial. *Ann Beh Med* 26(2), 105-113.
- Jones, L., Courneya, K., Peddle, C., & Mackey, J. (2005). Oncologists' opinions towards recommending exercise to patients with cancer: a Canadian national survey. *Supportive care in Cancer*. 13(11), 929-937. DOI: <https://doi.org/10.1007/s00520-005-0805-8>
- Ha, D., Reis, A., Mazzone, P., Lippman, S., & Fuster, M. (2018). Exercise capacity and cancer-specific quality of life following curative intent treatment of stage I-III lung cancer. *Supportive Care in Cancer*. 26(7). DOI: <https://doi.org/10.1007/s00520-018-4078-4>
- Hayes. S., Johansson, K., Alfano, C. & Schmitz, K. (2011). Exercise for breast cancer survivors: bridging the gap between evidence and practice. *Translational Behavioural Medicine*. 1(4), 539-544. DOI: 10.1007/s13142-011-0082-7
- Huijg, J., Gebhardt, W., Crone, M., Dusseldorp, E., & Penseau, J. (2014). Discriminant content validity of a theoretical domains framework questionnaire for use in implementation research. *Implementation Science* 9(1), 1-16. DOI: 10.1186/1748-5908-9-11
- Kampshoff, C., van Dongen, J., van Mechelen, W., Schep, G., Vreugdenhil, A., Twisk, J.,... Buffart, L. (2018). Long-term effectiveness and cost-effectiveness of high versus low-to-moderate intensity resistance and endurance exercise interventions among cancer survivors. *Journal of Cancer Survivorship* 12(3), 417-429. DOI: <https://doi.org/10.1007/s11764-018-0681-0>
- Keesing, S., Rosenwax, L., & McNamara, B. (2018). The implication of women's activity limitations and role disruptions during breast cancer survivorship. *Women's Health*. 14, 1-11. DOI: 10.1177/1745505718756381

- Kemeny, M, Peterson, B, Kornblith, A, Muss, H, Wheeler, J, Levine,, E, Bartlett N, Fleming, G, Cohen, H (2004). . Barriers to clinical trial participation by older women with breast cancer. *J Clin Oncol.* 22(23):4811. doi: 10.1200/JCO.2003.09.124
- Kenyon, K., Hebron, C., Vuoskoski, P., & McCrum, C. (2018). Physiotherapists' experiences of managing upper limb movement impairments due to breast cancer treatment. *Physiotherapy theory and practice:* 1-14. DOI: 10.1080/09593985.2018.1480077
- Kessels, E., Husson, O., Van der Feltz-Cornelis, C. (2018). The effect on cancer-related fatigue in cancer survivors: a systematic review and meta-analysis. *Neuropsychiatric Disease and Treatment* 14: 479-494. DOI: 10.2147/NDT.S150464
- Knapen, J., Vancampfort, D., Moriën, Y., & Marchal, Y. (2015). Exercise therapy improves both mental and physical health in patients with major depression. *Disability and Rehabilitation.* 37(16), 1490-1495. DOI: 10.3109/09638288.2014.972579
- Koutoukidis, D., Beeken, R., Lopes, S., Knobf, M., & Lanceley, A. (2017). Attitudes, challeges and needs about diet and physical activity in endometrial cancer survivors: a qualitative study. *European Journal of Cancer Care* 26(6), e12531. DOI: 10.1111/ecc.12531
- Krebber, A., Buffart, L., Kleihn, G., Riepma, I., deBree, R., Leemans, C., ...Verdonck-de Leeuw, I. (2014). Prevalence of depression in cancer patients: a meta-analysis of diagnostic interviews and self-report instruments. *Psycho-Oncology* 23(2), 121-130. DOI: 10.1002/pon.3409
- Kumar, S., Singh, A., & Dhiman, S. (2018). Importance of physical therapy approaches to improve quality of living in cancer patients: a review. *Research and Reviews: Journal of Oncology and Hematology.* 7(1): 7-15.
https://www.researchgate.net/profile/Saurabh-Kumar-115/publication/326930434_Importance_of_Physical_Therapy_Approaches_to_Improve_Quality_of_Living_in_Cancer_Patient_A_Review/links/5b6d3b6292851ca65054350c/Importance-of-Physical-Therapy-Approaches-to-Improve-Quality-of-Living-in-Cancer-Patient-A-Review.pdf
- LaVoy, E., Fagundes, C., & Dantzer, R. (2016). Exercise, inflammation and fatigue in cancer survivors. *Exercise Immunology Review* 22, 82-93.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4755327/>
- Lewis, J, Kilgore, M, Goldman, D, Trimble, E, Kaplan, R, Montello, M., Housman, M, Escarce J. (2003). Participation of patients 65 years of age or older in cancer clinical trials. *J Clin Oncol.*21(7):1383-9. doi: 10.1200/JCO.2003.08.010. PMID: 12663731.
- Levangie, P., Santasier, A., Stout, N. & Pfalzer, L. (2011). A qualitative assessment of upper quarter dysfunction reported by physical therapists treated for breast cancer or

treating breast cancer sequelae. *Supportive Care in Cancer* 19: 1367-1378. DOI: 10.1007/s00520-010-0959-x

Lobel, F., Stoutenberg, M., & Hutber, A. (2014). The exercise is medicine global health initiative: A 2014 update. *British Journal of Sports Medicine*, 48(22), 1627. doi:10.1136/bjsports-2013-093080

Lowe, S., Watanabe, S., Baracos, V., & Courneya, K. (2010) Physical activity interests and preferences in palliative cancer patients. *Supportive Care in Cancer* 18(11), 1469-1475. DOI: 10.1007/s00520-009-0770-8

MacMillan Cancer Support (2017). *The importance of physical activity for people living with and beyond cancer: a concise evidence review*. England and Wales. Retrieved from https://www.macmillan.org.uk/_images/the-importance-physical-activity-for-people-living-with-and-beyond-cancer_tcm9-290123.pdf

Madureira, M.M., Bonfá E., Takavama L., & Pereira R.M. (2010) A 12 month randomized controlled trial of balance training in elderly women with osteoporosis: improvements in quality of life. *Maturitas*. 66(2), 206-11.

Marker, R., Cox-Martin, E., Jankowski, C., Purcell, W., & Peters, J. (2018). Evaluation of effects of a clinically implemented exercise program on physical fitness, fatigue and depression in cancer survivors. *Supportive Care in Cancer* 26(6), 1861-1869. DOI: 10.1007/s00520-017-4019-7

Marzorati, C, Riva, S & Pravettoni, G (2017). Who is a cancer survivor? A systematic review of published definitions. *Journal of Cancer Education* 32(2), 228-237

McCosker, H., Barnard, A., Gerber, R. (2001). Undertaking Sensitive Research: Issues and Strategies for Meeting the Safety Needs of All. *Forum: Qualitative Social Research*, 2(1). DOI: <http://dx.doi.org/10.17169/fqs-2.1.983>

McIntosh, M., and Morse, J. (2015). Situating and constructing diversity in semi-structured interviews. *Global Qualitative Nursing Research* 2: 1-12. <https://doi.org/10.1177/2333393615597674>

McKenzie, J.E., O'Connor, D, Page, M., Mortimer, D., French, S., Walker, B.,... & Green, S. (2010). Improving the care for people with acute low-back pain by allied health professionals (the ALIGN trial): a cluster randomised trial protocol. *Implementation Science* 5:86. DOI: 10.1186/1748-5908-5-86

McNeely, M., Campbell, K., Ospina, M., Rowe, B., Dabbs, K., Klassen, T., ... Courneya, K. (2010). Exercise interventions for upper-limb dysfunction due to breast cancer treatment. *Cochrane Database of Systematic Reviews* 6. DOI: 10.1002/14651858.CD005211.pub2.

- McSherry, L., Dombrowski, S., Francis, J., Murphy, J., Martin, C., O'Leary, J., Sharp, L., & Group, A. (2012). 'It's a can of worms': understanding primary care practitioners' behaviours in relation to HPV using the theoretical domains framework. *Implementation Science* 7(1), 73. DOI: 10.1186/1748-5908-7-73
- Mewes, J., Steuten, L., Ijzerman, M., van Harten, W. (2012). Effectiveness of multidimensional cancer survivor rehabilitation and cost-effectiveness of cancer rehabilitation in general: a systematic review. *The oncologist* 17(12), 1581-93. DOI: 10.1634/theoncologist.2012-0151
- Michie, S., Johnston, M., Abraham, C., Lawton, R., Parker, D., & Walker, A. (2005). Making psychological theory useful for implementing evidence based practice: a consensus approach. *Quality & safety in health care* 14(1), 26-33. DOI: 10.1136/qshc.2004.011155
- Michie, S., & Prestwich, A. (2010). Are interventions theory-based? Development of a theory coding scheme. *Health psychology : official journal of the Division of Health Psychology, American Psychological Association* 29(1), 1-8. DOI: 10.1037/a0016939
- Miller, M., Bzdell M. (2010). Development of a physiotherapy prioritization tool in the Baffin Region of Nunavut: a remote, under-serviced area in the Canadian Arctic. *Rural and Remote Health*; 10: 1466. <https://doi.org/10.22605/RRH1466>
- Mirbaha, F., Shalviri, G., Yazdizadeh, B., Gholami, K., Majdzadeh, R. (2015). Perceived barriers to reporting adverse events in hospitals: a qualitative study using theoretical domains framework approach. *Implementation Science* 10(1), 110. DOI: 10.1186/s13012-015-0302-5
- Mishra, S., Scherer, R., Snyder, C., Geigle, P., Berlanstein, D., Topaloglu, O. (2012). Exercise interventions on health-related quality of life for people with cancer during active treatment. *Cochrane Database of Systematic Reviews* 8. DOI: 10.1002/14651858.CD008465.pub2
- Montagnini, M., Lodhi, M., & Born, W. (2003). The utilization of physical therapy in a palliative unit. *Journal of Palliative Medicine* 6(1), 11-17. DOI: 10.1089/10966210360510073
- Moore, P., Rivera. S., Bravo-Soto, G., Olivares, C. & Lawrie. T. (2018). Communication skills training for healthcare professionals working with people who have cancer. *Cochrane Database of Systematic Reviews* 7. DOI: 10.1002/14651858.CD003751.pub4
- Morse, J. (2015). Critical analysis of strategies for determining rigor in qualitative inquiry. *Qualitative Health Research* 25(9), 1212-1222. DOI: 10.1177/1049732315588501

- Mullan, F. (1985). Seasons of survival: reflections of a physician with cancer. *New England Journal of medicine* 313(4), 270-273. DOI: 10.1056/NEJM198507253130421
- Nadler, M., Bainbridge, D., Tomasone, J., Cheifetz, O., Juergens, R., & Sussman, J. (2017). Oncology care provider perspectives on exercise promotion in people with cancer: an examination of knowledge, practices, barriers and facilitators. *Supportive care in cancer* 25(7), 2297-2304. DOI: 10.1007/s00520-017-3640-9
- National, R. C. S., & National, C. P. B. S. (2005). *From cancer patient to cancer survivor : lost in transition*. Retrieved from <https://ebookcentral.proquest.com>
- Nekhlyudov, L., Ganz, P., Arora, N. & Rowland, J. (2017). Going beyond being lost in transition: A decade of progress in cancer survivorship. *Journal of clinical oncology: official journal of the American Society of Clinical Oncology* 35(18), 1978-1981. DOI: 10.1200/JCO.2016.72.1373
- New Brunswick Cancer Network (2013). *Cancer in New Brunswick 2013*. Retrieved from <https://www2.gnb.ca/content/dam/gnb/Departments/h-s/pdf/en/Cancer/CancerInNewBrunswick2007-2013.pdf>
- O'Donnell, D., Webb, K., Langer, D., Elbehairy, A., Neder, J., & Dudgeon, D. (2016). Respiratory factors contributing to exercise intolerance in breast cancer survivors: a case-control study. *Journal of Pain and Symptom Management* 52(1), 54-63. DOI: 10.1016/J.JPAINSYMMAN.2016.01.004e1
- O'Hanlon, É & Kennedy, N (2014). Exercise in cancer care in Ireland: a survey of oncology nurses and physiotherapists. *European Journal of Cancer care* 23(5), 630-639. DOI: 10.1111/ecc.12206
- Olsson Möller, U., Stigmar, K., Beck, I., Malmström, M., & Rasmussen, B. (2018). Bridging gaps in everyday life – a free-listing approach to explore the variety of activities performed by physiotherapists in specialized palliative care. *BMC Palliative Care*. 17:20. DOI: 10.1186/s12904-018-0272-x
- Opdenakker R (2006) Advantages and disadvantages of four interview techniques in qualitative research. Forum: *Qualitative Social Research* 7(4). <http://www.qualitative-research.net/index.php/fqs/article/view/175/391>
- Ortlipp, M. (2008). Keeping and using reflective journals in the qualitative research process. *Qualitative Report*, 13(4), 695-705.
- Palinkas, L., Horwitz, S., Green, C., Wisdom, J., Duan, N., & Hoagwood, K (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Adm Policy Ment Health* 42(5), 533-544. DOI: <https://doi.org/10.1007/s10488-013-0528-y>

- Paltiel, H., Solvoll, E., Loge, J., Kaasa, S., & Oldervoll, L. (2009). "The healthy me appears": Palliative cancer patients' experiences of participation in a physical group exercise program. *Palliative and supportive care* 7(4), 459-467. DOI: 10.1017/S1478951509990460
- Park, C.L., Zlateva, I. & Blank, T.O. (2009). Self-identity After Cancer: "Survivor", "Victim", "Patient", and "Person with Cancer". *J GEN INTERN MED* 24, 430. <https://doi-org.proxy.hil.unb.ca/10.1007/s11606-009-0993-x>
- Pearce, A., Haas, M., Viney, R., Pearson, S.-A., Haywood, P., Brown, C., & Ward, R. (2017). Incidence and severity of self-reported chemotherapy side effects in routine care: A prospective cohort study. *PLoS ONE*, 12(10), e0184360. <http://doi.org/10.1371/journal.pone.0184360>
- Pearson, C., St-Arnaud, J., & Geran, L. (2014). *Understanding seniors' risk of falling and their perceived risk*. Statistics Canada, Retrieved from <http://www.statcan.gc.ca/pub/82-624-x/2014001/article/14010-eng.pdf>
- Pfaff, K., Freeman-Gibb, L., Patrick, L., DiBiase, R. & Moretti, O. (2017) Reducing the "cost of caring" in cancer care: Evaluation of a pilot interprofessional compassion fatigue resiliency programme, *Journal of Interprofessional Care*, 31:4, 512-519, DOI: [10.1080/13561820.2017.1309364](https://doi.org/10.1080/13561820.2017.1309364)
- Pidzolskyj, K., Roddam, H., Rawlinson, G., & Selfe, J. (2014). Exploring aspects of physiotherapy care valued by breast cancer patients. *Physiotherapy* 100(2), 156-161. DOI: 10.1016/J.PHYSIO.2014.03.006
- Public Health Agency of Canada. *Falls Prevention and Health Aging*. Accessed from: http://www.phac-aspc.gc.ca/seniors-aines/publications/pro/healthy-sante/haging_newvision/vision-rpt/falls-chutes-eng.php; on July 16, 2012.
- Prue, G., Rankin, J., Allen, J., Gracey, J., & Cramp, F. (2006). Cancer-related fatigue: a critical appraisal. *European Journal of Cancer* 42(7), 846-863. DOI: [10.1016/j.ejca.2005.11.026](https://doi.org/10.1016/j.ejca.2005.11.026)
- Pyszora, A., Budzyński, J., Wójcik, A., Prokop, A., & Krajnik, M. (2017). Physiotherapy programme reduces fatigue in patients with advanced cancer receiving palliative care: randomized controlled trial. *Support Care Cancer* 25: 2899-2908. DOI: 10.1007/s00520-017-3742-4
- Ramirez, A., Graham, J., Richards, M. *et al.* (1995). Burnout and psychiatric disorder among cancer clinicians. *Br J Cancer* 71, 1263-1269. <https://doi.org/10.1038/bjc.1995.244>

- Rees, S. (2018). A qualitative exploration of the meaning of the term “survivor” to young women living with a history of breast cancer. *Eur J Cancer Care* 27: e12847. <https://doi-org.proxy.hil.unb.ca/10.1111/ecc.12847>
- Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing & Health* 23(4), 334-340. DOI: 10.1002/1098-240X(200008)23:4<334::AID-NUR9>3.0.CO;2-G
- SantaMina, D., Clarke, H., Ritvo, P., Leung, Y., Matthew, A., Katz, J., . . . Alibhai, S. (2014). Effect of total-body prehabilitation on postoperative outcomes: a systematic review and meta-analysis. *Physiotherapy* 100(3), 196-207.
- Schmitz, K., Courneya, K. M., Demark-Wahnefried, W., Galvao, D., Pinto, B., Irwin, M., . . . Schwartz, A. (2010). American College of Sports medicine Roundtable on exercise guidelines for cancer. *Medicine and Science in sports and exercise* 24(7), 1409-1426.
- Schmitz, K., Campbell, A., Stuver, M., Pinto, B., Schwartz, A., Morris, S...Matthews, C. (2019). Exercise is medicine in oncology: Engaging clinicians to help patients move through cancer. *CA: A cancer journal for clinicians*. 69(6): 468-484. DOI: 10.3322/caac.21579
- Segal, R., Zwaal, G., Tomasone, J., Loblaw, A., & T, P. (2015). *A Quality Initiative of the program in Evidence-Based Care (PEBC), Cancer Care Ontario (CCO): Exercise for people with cancer*. Toronto: Cancer Care Ontario.
- Sheill, G., Guinan, E., Neill, L., Hevey, D., & Hussey, J. (2017). Physical activity and advanced care: the views of oncology and palliative care physicians in Ireland. *Ir J Med Sci*: 1-6. DOI: 10.1007/s11845-017-1677-x
- Silver, J., Baima, J., & Mayer, R.S. (2013). Impairment-driven cancer rehabilitation: an essential component of quality care and survivorship. *CA: A cancer journal for clinicians* 63(5): 295-317. DOI: 10.3322/caac.21186
- Silver, J. (2014). Cancer rehabilitation and prehabilitation may reduce disability and early retirement. *Cancer* 120(14). DOI: 10.1002/cncr.28713
- Silver, J., Raj, V., Fu, J., Wisotzky, E., Robinson Smith, S., Kirch, R., Kirch, R. (2015). Cancer rehabilitation and palliative care: critical components in the delivery of high-quality oncology services. *Support Care Cancer* 23: 3633-3643. DOI: 10.1007/s00520-015-2916-1
- Skelton, D., Dinan, S., Campbell, M. & Rutherford, O. (2005). Tailored group exercise (falls management exercise) reduces fall community-dwelling older frequent faller. *Age and ageing*. 34(6), 636-639 <https://doi.org/10.1093/ageing/afi174>

- Skolarus, T., Wolf, A., Erb, N., Brooks, D. D., Rivers, B., Underwood, W., . . . Cowens-Alvarado, R. (2014). American Cancer society prostate. *CA: A Cancer Journal for Clinicians*, 225-249.
- Speck, R., Courneya, K., Mâsse, L., Duval, S., & Schmitz, K. (2010). An update on controlled physical activity trials in cancer survivors: a systematic review and meta-analysis. *Journal of Cancer Survivorship* 4(2), 87-100. DOI: 10.1007/s11764-009-0110-5
- Spence, R., Heesch, K., & Brown, W. (2010). Exercise and cancer rehabilitation: a systematic review. *Cancer Treatment Reviews* 36(2), 185-194. DOI: 10.1016/J.CTRV.2009.11.003
- Smith-Turchyn, J., Richarson, J., Tozer, R., McNeely, M., & Thabane., J. (2016). Physical activity and breast cancer: a qualitative study on the barriers to and facilitators of exercise promotion from the perspective of health care professionals. *Physiotherapy Canada* 68(4), 383-390. DOI: 10.3138/ptc.2015-84
- Statistics Canada (2017). *Canadian Cancer Statistics*. Retrived from <https://www.canada.ca/en/public-health/services/chronic-diseases/cancer/canadian-cancer-statistics.html>
- Statistics Canada (2018). *Number and rates of new cases of primary cancer (based on the November 2017 CCR tabulation file), by cancer type, age group and sex*. Retrived from <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310011101>
- Statistics Canada (2020). Demographic estimates by age and sex, provinces and territories. Accessed May 16, 2021. <https://www150.statcan.gc.ca/n1/pub/71-607-x/71-607-x2020018-eng.htm>
- Statistics Canada (2021). Canadian Tobacco and Nicotine Survey 2020. Accessed May 14, 2021. <https://www150.statcan.gc.ca/n1/daily-quotidien/210317/dq210317b-eng.htm>
- Statistics Canada (2021). Number and rates of primary cancers by cancer type, age, group and sex. Accessed May 13, 2021. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310011101>
- Stout, N., Alfano, C., Belter, W., Nitkin, R., Cernich, A., Lohmann Siegel, K., & Chan, L. (2018). A bibliometric analysis of the landscape of cancer rehabilitation research (1992-2016). *Journal of the National Cancer Institute* 110(8), 815-824. DOI: 10.1093/inci/djy108
- Stubblefield, M., Hubbard, G., Cheville, A., Koch, U., Schmitz, K., & Dalton, S. (2013). Current perspectives on cancer rehabilitation. *Cancer* 119(S11), 2170-2178. DOI: 10.1002/cncr.28059

- Sweegers, M., Altenburg, T., Brug, J., May, A., vanVulpen, J., Aaronson, N., Arbane, G...Buffart, L. (2019). Effects and moderators of exercise on muscle strength, muscle function and aerobic fitness in patients with cancer: a meta-analysis of individual patient data. *Br J Sports Med.* 2019 53(13): 812. DOI: 10.1136/bjsports-2018-099191
- Thorne, S., Kirkham, S., & MacDonald-Emes, J. (1997). Interpretive description: A noncategorical qualitative alternative for developing nursing knowledge. *Research in Nursing and Health* 20(2), 169-177. DOI: 10.1002/(SICI)1098-240X(199704)20:2<169::AID-NUR9>3.0.CO;2-I
- Thorne, S., Reimer Kirkham, S. & O'Flynn-Magee, K. (2004). The analytic challenge in interpretive description. *International Journal of Qualitative Methods* 3(1), 1-11. DOI: 10.1177/160940690400300101
- Thorne, S (2016). *Interpretive description: qualitative research for applied practice*. New York, NY: Routledge, Taylor & Francis Group
- Tian, L., Hui, L., Lin, L., & Yan, H. (2016). Effects of aerobic exercise on cancer-related fatigue: a meta-analysis of randomized control trials. *Supportive care in cancer* 24: 969-983. DOI: 10.1007/s00520-015-2953-9
- Trufellie, D., Bensi, C., Garcia, J., Narahara, J., Abrao, M., Diniz, R....& Giglio, A. (2008). Burnout in cancer professionals: a systematic review and meta-analysis. *European Journal of Cancer care* 17(6): 524-531. <https://doi.org/10.1111/j.1365-2354.2008.00927.x>
- Ubbink, D., Guyatt, G., & Vermeulen, H. (2013). Framework of policy recommendations for implementation of evidence-based practice: a systematic scoping review. *British Medical Journal Open* 3: e001881. DOI: 10.1136/bmjopen-2012-001881
- van den Beuken-van Everdingen, M., de Rijke, J., Kessels, A., Schouten, H., vanKleef, M., & Patijn, J. (2007). Prevalence of pain in patients with cancer: a systematic review of the past 40 years. *Annals of Oncology* 18(9), 1437-1449. DOI: 10.1093/annonc/mdm056
- van den Beuken-van Everdingen, M., Hochstenbach, L., Joosten, E., Tjan-Heijnen, V., & Janssen, D. (2016). Update on prevalence of pain in patients with cancer: systematic review and meta analysis. *Journal of pain and symptom management* 51(6), 1070-1090. DOI: 10.1016/J.JPAINSYMMAN.2015.12.340
- VanderWalde, N, Williams, G. (2020). Developing an electronic geriatric assessment to improve care of older adults with cancer receiving radiotherapy. *Tech Innov Patient Support Radiat Oncol.* 2020;16:24-29. doi:10.1016/j.tipsro.2020.09.002

- Vira, P., Samuel, S., Amaravadi, S., Saxena, P., Rai, S., Kurian, J., & Gururaj, R. (2020). Role of Physiotherapy in Hospice Care of Patients with Advanced Cancer: A Systematic Review. *American Journal of Hospice and Palliative medicine*. 38(5). <https://doi-org.proxy.hil.unb.ca/10.1177/1049909120951163>
- Wade, D. (2006). Why physical medicine, physical disability and physical rehabilitation? We should abandon Cartesian dualism. *Clinical Rehabilitation* 20(3), 185-190. doi.org/10.1191/0269215506cr952ed
- Walkinshaw, E (2011). Patient navigators becoming the norm in Canada. *Canadian Medical Association Journal*. 183(15). E1109-E1110. <https://www.cmaj.ca/content/183/15/E1109.short>
- Walkinshaw, E (2011b). Steering through the medical maze. *Canadian Medical Association Journal* 183(15). 1698-1699. <https://www.cmaj.ca/content/183/15/1698>
- Wang, K., Yee, C., Tam, S., Drost, L., Chan, S., Zaki, P., Rico, V....DeAngelis, C. (2018). Prevalence of pain in patients with breast cancer post-treatment: A systematic review. *The Breast* 42: 113-127. DOI: <https://doi.org/10.1016/j.breast.2018.08.105>
- Williams, K., Beeken, R., Fisher, A. & Wardle, J. (2015). Health professionals' provision of lifestyle advice in the oncology context of the United Kingdom. *European Journal of Cancer Care* 24(4), 522-530. DOI: 10.1111/ecc.12305
- Wilson, C., Stiller, C., Doherty, D., & Thompson, K. (2017). The Role of Physical Therapists Within Hospice and Palliative Care in the United States and Canada. *American Journal of Hospice and Palliative Care* 34(1), 34-41. DOI: 10.1177/1049909115604668
- World Health Organization (2011). World report on disability. http://www.who.int/disabilities/world_report/2011/report.pdf
- World Health Organization (2017). Rehabilitation 2030. A call for action. Geneva, Switzerland. <http://www.who.int/disabilities/care/Need-to-scale-up-rehab-July2018.pdf?ua=1>
- Yang, A., Sokolof, J., & Gulati, A. (2018). The effect of preoperative exercise on upper extremity recovery following breast cancer surgery: a systematic review. *International Journal of Rehabilitation Research* 41(3): 189-196. DOI: 10.1097/MRR.0000000000000288

Curriculum Vitae

Lyne Ouellet

University of New Brunswick, Saint John, Bachelor of Science (Biology), 1996

Dalhousie University, Bachelor of Science (Physiotherapy), 2000

Publications: None

Conference Presentations:

Canadian Association of Gerontology: poster presentation. Social isolation and loneliness: a community approach to reaching seniors, October 2021

27th Annual Graduate Research Conference, University of New Brunswick, 2021.
Perspectives on providing care to cancer survivors in New Brunswick; Social isolation and loneliness: an issue facing seniors in Fredericton.

25th Annual Graduate Research Conference, University of New Brunswick, 2018.
Physiotherapists's perspectives on healthcare services to cancer survivors in Atlantic Canada.